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A study was made to determine the effect of heterogeneous and homogeneous grouping in ninth-grade English classes. On the bases of IQ and reading language skills, students were grouped at three ability levels and placed in heterogeneous, homogeneous superior, homogeneous slow, and homogeneous average classes. Teacher variables were reduced by having the same teacher assigned to a heterogeneous class and a homogeneous class.

Results were discussed in reference to assessment measures, class discussion, teacher ratings, peer ratings, self-concept, and attitude toward the experimental English class and school. Placement in homogeneous classes did not significantly change the relative achievement status of any group as measured by standardized tests. In class discussions, the level of vocabulary and patterns of participation differed with ability level and type of grouping. Superior students participated the most in heterogeneous classes. The level of words in heterogeneous classes was high, showing the dominance of superior students. Slow students participated more in homogeneous classes. Teacher ratings included general evaluation of performance, six intellectual ratings and one social rating, and course grade. All ratings showed that in heterogeneous classes, superior and average students were viewed as very different from slow students; in homogeneous classes, while superior students were still rated highest, the distinction between average and slow students disappeared. In heterogeneous classes, superior students were chosen most often in peer ratings on intellectual and social items; in homogeneous classes at least some slow or average students were nominated. In heterogeneous classes self-concepts conformed closely to true ability levels; in homogeneous classes, all groups saw themselves as close to average.

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Student Abilities, Grouping Patterns, and Classroom Interaction

Final Report
of
Cooperative Research Project No. 608

entitled

The Effectiveness of Homogeneous and Heterogeneous Ability Grouping in Ninth Grade English Classes with Slow, Average, and Superior Students

Elizabeth Monroe Drews

Office of Research and Publications
Michigan State University
East Lansing, Michigan

1963

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by the Cooperative Research Program of the
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PREFACE

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PREFACE

My early years were spent in the Far West and it was in this simple, optimistic environment that my educational philosophy and my need to take action on educational matters developed. As an eighteen-year-old teaching all grades in a one-room country school and the next year as a junior in the University of Oregon I developed a deep interest in learning problems.

This junior year at the University was the first of my five years as an assistant in a prototypic learning center, the DeBusk Memorial Psychoeducational Clinic. Here I was introduced to new viewpoints as to causes of reading problems in Marion Monroe's Children Who Cannot Read and E. A. Betts' Cause and Prevention of Reading Problems. Grace Fernald added her unusual insights in the summers when she worked with the clinic as a consultant. I also came face to face with children who had not learned to read. These encounters led me to see that an interweaving of factors -- the cultural deficit resulting from a poor early environment, the energy deficiencies produced by physical problems, and the learning barriers which can result from "getting off to a bad start in school" -- often produces reading problems. I came to understand the problem as interactive and to understand that continued school failure resulted in a non-acceptance and a lack of reward that could only breed more failure. Finally, I began to realize that all of this produced a vicious circle that early walled off the child who does not learn from the others who are learning.

For five years I struggled (first as a clinic worker who was an art student by enrollment preference and later as a convert to clinical work and a candidate for a master's) in this effort to understand what goes wrong in our schools and how we might remedy the flawed situation. Through all of this Elizabeth Montgomery was director of the clinic and my mentor -- a beautiful, compassionate, and gifted woman who was devoted to the enterprise of studying children and how they learn. She also had a very rare individual devotion to the hundreds of children and scores of teachers that came to work with us in the center. It was my supreme fortune to share her office and her thoughts and to be allowed to teach as well as test the youngsters who came to us. We worked with hundreds of children who had learning problems as well as with some exceptionally gifted children.

In retrospect I find that much of my present psychological orientation and value system dates from my clinical experience and studies at Oregon. However, I am quite sure that it was my seven years of teaching in the public schools that have given me whatever grasp I have upon the larger reality. Fortunately, my teaching has been at all grade levels and in a variety of communities. After beginning in a rural community I later moved to the overcrowded and poorly equipped classrooms of an Oregon sawmill town. Here I taught large numbers of culturally deprived youngsters. Some were

"Okies" but there were many others who were native products distinguished chiefly by their great retardation in reading and by being over-age for their grade assignments.

In contrast to these situations, I also taught in schools where the children were culturally privileged and gifted in all of the ways that we currently define this elusive quality. Just prior to World War II my husband and I taught in the Peking American School in North China. This time I worked with English, art, and social studies and taught upper elementary and high school students. The imminence of war forced a return to the states where I taught an equally gifted group of sixth graders in a suburb of Portland, Oregon. Finally I did my last public school teaching in a comprehensive high school in a small western city, teaching English and art.

All of this -- my academic experience and my clinical and teaching ventures made me vividly aware of the "haves" and the "have nots" in education. As I taught at different grade levels and followed these young people in their school experiences I came to realize that as children progress through school the gap widens continually between the ones that have caught on and those that have not. My understanding of the complexity of the situation was further increased during my years as a psychologist in the Psychological Clinic at the University of Michigan (1944-1948) and by a long, searching apprenticeship served under Dr. Irving Anderson at the University of Michigan. This latter work resulted in a doctoral dissertation in which the focal point was reading disability. The study included both a review and critical appraisal of research in several disciplines -- psychology, neurology, psychiatry, opthalomogy, and optometry.

The results of research concerned with "specific reading disability" (at least up to 1954 when my dissertation was completed) proved to be confusing and conflicting. As a result, in 1949 I decided to add an experimental study to the dissertation that originally had been planned as a critical evaluation of the literature. For this second aspect I studied over 500 youngsters with reading problems, comparing them with 750 children who learned to read easily. Slow maturation and inappropriate school experience rather than neural disorders seemed to be related to the reading difficulty but I could find no easy nor complete answer for the reading dilemma.

From this search in the academic labyrinths and from the clinical work that I was doing, I moved back into the public schools and again had first-hand encounters with full-scale problems. This time I was in charge of special reading programs and director of psychological services for the Lansing Public Schools. Here I was able to continue my study of children with reading problems and to work with teachers and administrators in devising programs to meet these needs. Some of the aspects of this work are described in Chapter 2. It was in this setting that the study of grouping was formulated and carried through. More specifically, this work was an outgrowth of a program of special reading classes in the junior high schools that we had instituted in 1949. In 1952 adjusted classes for slow learners were introduced and in 1954 we initiated advanced programs for the academically talented. In these various experimental programs we studied the personality, learning styles, interests and needs of a large number of both slow and able learners. It was our hope to adjust the school situation to these needs through special grouping and instructional approaches. Thus we had tried many classes of this kind before the program was conceptualized in the form that it is presented in this research study.

The study itself was tested initially in an eighth grade social studies setting and then redesigned for the proposal supported by Cooperative Research in 1959. This new study has as its setting ninth grade English classes in the Lansing Public Schools and took place in the school year of 1958-59. The present manuscript concerns itself with a presentation of the inception, research design and findings of this experiment.

The writing of the report was no simple problem. We encountered what we felt to be far more than the usual number of machine and human failures. At one point all of our data was carefully placed on tapes for analysis by an electronic computer. Between the excellent statistician who was helping us and the technical workers that were working for the machine the directions for analysis were misunderstood, confusion reigned at the last minute and the tables were literally turned. Thus, our data was analyzed by sex differences instead of on the variables of primary concern -- differences between homogeneous and heterogeneous groups. The problem was compounded by a computer breakdown which made our data unavailable for six months. We began again. And we continued to encounter such minor tragedies as a return of one set of data from the IBM installation punched for three sexes -- male, female, and a mysterious third. Perhaps the problem was sex-linked! This was our last clue as to the nature of the project's private poltergeist. We were left asking ourselves if the problem were self-generating -- did it have an identity beyond the sum of its parts? Somehow we survived and wrote our first draft early in 1961. This was extensively corrected and re-written a year later. This second draft was read in part or in toto by:

Dr. A. Sterl Artley, College of Education, University of Missouri.

Dr. Mary Jane Aschner, Institute for Cognitive Studies, Harvard University.

Mrs. Bryon Autrey, formerly with Lansing Public Schools -- teacher in experimental study.

Dr. Forrest G. Averill, Superintendent, Lansing Public Schools.

Dr. Jack Birch, Head of Special Education, University of Pittsburgh.

Dr. Charles Bish, Director, Project for the Academically Talented, National Education Association.

Dr. Walter Borg, Director of Educational Research, Utah State University.

Mrs. Arthur Boroughs, Research Assistant on the project.

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Dr. Wilbur Brookover, Director, Bureau of Educational Research, Michigan State University.

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Mrs. Cecil Elmore, formerly with Lansing Public Schools -- teacher in experimental study.

Dr. Luther Evans, former Project Director, Educational Implications of Automation, National Education Association.

Dr. John C. Flanagan, President, American Institute for Research, Pittsburgh.

Miss Mabel Fry, Lansing teacher who had participated in earlier studies.

Dr. James Gallagher, Institute for Research on Exceptional Children, University of Illinois.

Dr. John W. Gardner, President, Carnegie Corporation of New York.

Dr. Miriam Goldberg, Horace Mann-Lincoln Institute, Teachers College, Columbia University.

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Mr. John Klempner, graduate student, Michigan State University.

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Dr. Gordon P. Liddle, Department of Human Development, University of Chicago.

Dr. Walter M. Lifton, formerly Director, Guidance Publications and Services, Science Research Associates, Incorporated.

Dr. Donald MacKinnon, Director, Institute for Personality Assessment and Research, University of California.

Mr. Ray MacLaughlin, President, Michigan Education Association, 1962-1963.

Dr. Abraham Maslow, Department of Psychology, Brandeis University.

Mr. John McCaffrey, Principal, Montrose High School, Colorado.

Dr. David C. McClelland, Chairman, Department of Social Relations, Harvard University.

Dr. Carson McGuire, College of Education, University of Texas.

Mr. John McInnes, East York Schools, Toronto, Ontario.

Mr. William Monroe, Public school teacher, Colton, Oregon.

Dr. Victor Noll, College of Education, Michigan State University.

Miss Mary Padden, Lansing Public Schools -- teacher in experimental study.

Dr. John Patterson, College of Education, Purdue University.

Dr. Maynard Reynolds, College of Education, University of Minnesota.

Dr. Dwight H. Rich, Former Superintendent of Schools, Lansing, Michigan.

Mrs. William Rouse, formerly with Lansing Public Schools -- teacher in experimental study.

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Mrs. Russell Schneider, Counselor, Eastern High School, Lansing. (Formerly at Pattengill Junior High School)

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Dr. Hilda Taba, College of Education, San Francisco State College.

Dr. Herbert Thelen, College of Education, University of Chicago.

Mrs. Donald Thompson, Berkeley, California. (Editorial assistant on project.)

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Mr. Robert Trezise, Lansing Public Schools -- teacher in experimental study.

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Dr. Goodwin Watson, Social Psychology and Education, Teachers College, Columbia University.

Miss Jane Ward, Teacher, Barnum Junior High School, Birmingham, Michigan.

Mrs. Alice Webb, Counselor, Everett Senior High School, Lansing.

Dr. Elizabeth Wilson, Director of Curriculum, Montgomery County Schools, Maryland.

Dr. Gilbert Wrenn, College of Education, Arizona State University.

The suggestions and criticisms of these individuals have helped me to clarify my thinking and, in some instances, I have modified my more extreme stands as a result of these interchanges. I am very much indebted to each for taking time from his or her busy schedule to read and react. However, it should be clearly understood that the final responsibility for all conclusions drawn and for all speculations advanced must be mine.

Special thanks for help and support are due to all who were directly involved in the study and particularly to the eight experimental teachers:

Elinor Autrey, Walter French	Mary Elmore, Walter French
Evah Crow, Pattengill	Mary Padden, Pattengill
Marian Dammon, West	Joyce Rouse, Otto
Lelia Earl, West	Robert Trezise, Otto

Also working closely with the study were several Lansing Public School administrators. Mr. Russell Schneider, Director of Secondary Curriculum, was always supportive and helpful. He participated in nearly all in-service meetings and shared discussions with the teachers and the investigator as to appropriate teaching approaches. The assistant principals who were in charge of special programs and who had major responsibilities for scheduling gave unstintingly of their time. Much work beyond the usual call of duty was involved in the random placement of nearly 600 students in twenty-two different classrooms (see pages 45-46 and 74). As a result of this and also because of the friendship and good will each extended I want to thank:

Anna Brewer, Pattengill	Granella Smith, West
Catherine Dettling, Walter French	Maureen Vind, Otto

A special debt is also owed to some 600 students who were originally selected in the spring of 1958 and especially to the 432 who remained in their specially assigned classes throughout the study. These were our subjects who submitted with little complaint to tests and observations and tape recordings. In fact some liked being visited so well that we received rather hurt queries from other classes, not in our study, as to why their classroom performances were not considered to be of sufficient interest for observation and recording by Michigan State University.

To Dr. Forrest Averill, present Superintendent of Schools in Lansing, I am especially grateful for personal support over a ten-year span of grouping experimentation (1949-1959) even though during most of this time he had some reservations about the desirability of grouping. I have benefitted from his essential human-ness, his deep concern for all children, and his fairness of mind. I also want to express my sincere thanks to Dr. Dwight Rich who, as Superintendent of Schools at the inception of the study, supplied not only permission to do the research but also gave strong encouragement and unfailing support.

My heartfelt appreciation goes, too, to those who did the endless tabulating, calculating and typing -- Shirley Brown, Jane DeRose, Larry Ernsberger, Marsha Estill, Sara McKim, and Susan Montgomery and to all of those who did the endless re-tabulating, re-calculating, and re-typing -- Mary Bridenbaugh, Ann Converse, Barbara Powers, Tommie Sue Robertson, Heather Thompson, and Arlis Thornblade. And at this distance in time we will extend a kind word to the machines -- MISTIC and IBM 604.

My research associates have been many, including graduate students and honors students whom I cannot name individually but who were always most helpful. I would like to mention those interviewers, observers, and statisticians connected officially with the project: Marcia McCally, Judith Webster, Karen Fox,

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It is also a pleasure to acknowledge the support my work received from staff members of the Cooperative Research Office. I particularly appreciated the encouragement offered by Dr. David Clark, former Director of Cooperative Research and who is now Director of Educational Research at Ohio State University and by Dr. William Carriker, former Research Coordinator for Cooperative Research, who has recently accepted a position as head of Special Education at Pennsylvania State University.

I also owe much to Dr. David Krathwohl and Dr. Wilbur Brookover of the Bureau of Educational Research at Michigan State University. Both helped with many aspects of the study. Dr. John Patterson formerly of the Bureau and Dr. Irvin Lehmann also gave much assistance.

Finally, my deepest appreciation must go to my devoted and long-suffering husband who was sometimes amused, generally tolerant, and slways helpful through the data collection, the original writing, and the three major revisions. In fact he has contributed hundreds of hours to the project, without recompense and with only occasional complaints.

PART I

BACKGROUND

INTRODUCTION

The major concern of this study is the comparison of students at different ability levels in different learning situations in the secondary school. Learning situations for students were differentiated by varying patterns of grouping and teaching. Chapter 1 reveals the value systems and theoretical constructs that undergird the study. It is held that the purpose of grouping in the schools is to achieve maximum differentiation of instruction so that individual differences can be met and instruction thus improved. Maslow's hierarchy of needs, which is concerned with both intellectual and affective variables, was chosen as a conceptual frame that was particularly applicable to the problems encountered.

Chapter 2, Section A, is devoted to a critical review of grouping research in general. Aside from the lack of comparability of students and the fact that no conclusions can be drawn from the few studies that are readily available, there are other major problems. Generally, comparisons are drawn on the basis of achievement testing. And yet, as was indicated in Chapter 1, social scientists and educational theorists now consider emotional

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and social learning as inseparable from the cognitive processes -- factors rarely accounted for in grouping research. These same theorists see the teacher as an active and influential agent and yet few of the grouping studies have concerned themselves with studying the teacher role. Even more essential than a study of the dimensions of the student and the variables found in the teaching situation is the on-going process of learning in the classroom. Again, this process does not seem to have been taken into account in prior studies.

Meeting individual differences through curricular adaptations and classroom grouping has been an area in which the investigator has had a long-term concern. In Chapter 2, Section B, three previous studies in the area of instructional grouping which she conducted -- one each in Junior High English, Junior High Social Studies, and Senior High English -- are reviewed. Out of these considerations -- current theory in education and kindred disciplines, the literature on grouping, and the investigator's previous experience with the problem -- a research problem was formulated. This was a fourth study on grouping and it was approached in two ways: (1) a formal research design similar to other studies in the area and (2) an informal design which took into account teaching activities, discussion process, teacher and peer attitudes, and the responses (self-ratings) of the individual student to this situation. Classroom learning was considered as an active process rather than a result or product.

CHAPTER 1

PHILOSOPHICAL ORIENTATION

Secondary education, as we know it, is on trial. If we are to move in the directions of our changing and developing values, the present system is clearly inadequate. We have, long ago, committed ourselves to a belief in a good society where prime importance is given to the individual and his fullest development in terms of character and quality of mind. For most of us this good society means the democratic social order in which we accept certain basic concepts of freedom and of the rights of the individual. We also feel that learning to think and to make decisions as individuals is essential for dealing with the problem of a complex world and for relating one's self positively to that world.

The development of the individual has been spoken of in many ways, one of which is the concept of the evolution and emergence of the human mind. Berrill in Man's Emerging Mind states, "The real trouble, however, is not that we are human but that we are not human enough, and the problem now is to define the essence of that humanity, to see what it means to be more human, and how we may possibly arrive at such a state."[1] He recognizes that attitudes about life and learning are an important part of what it means to be human and states, "To be human is to be youthful and joyful in spirit, which makes some people less human than others."[2] Thus one of our directives in education is to develop or preserve this freshness and eagerness of mind in each student. To do this, certain basic needs[3] -- for example: success, recognition, affection, and excitement -- must be met. And for as many as possible, the higher level need for a more complete self-realization must also be fostered. Maslow has termed this "growth motivation" and much of it comes from stimulation of a challenging, exciting, and often quite difficult task.

---

[1] N. J. Berrill, Man's Emerging Mind (New York: Fawcett World Library, 1957), p. 224.

[2] Ibid., p. 226.

[3] Many psychologists have dealt with the concept of basic needs. The particular concept referred to in this context is Maslow's "heirarchy of basic needs". The basic needs are physiological, safety, belongingness (love), esteem, and self-actualization. These are organized in a "hierarchy of prepotency" and their gratification is understood in terms of "degrees of relative satisfaction". This means that physiological needs (i.e., hunger) must be somewhat satisfied before the need for safety arises, that an individual must feel relatively safe before the love of others is needed, etc. Until the basic needs have been satisfied, an individual's behavior is referred to in terms of "deficiency motivation"; on the other hand, when those needs have been gratified, behavior is thought of in terms of "growth motivation"--the distinguishing characteristic being the freedom to cope more efficiently with external (to the organism) situations, having been freed of the demands of lower needs.

The careful reader will note that Maslow's idea will be used extensively as a point of reference. The rationale for this

If the young person has had an opportunity to develop fully as a human being with pride in his own kind of accomplishments and for his own particular style of life, it is much more probable that he will contribute and thus help make a better society. In other words, out of his self-realization and his security the adolescent (and eventually the resulting adult) may have energies to spare for the common good.[4] In a sense this is development beyond meeting basic needs, for the more fully developed person is no longer consuming himself in fighting for mere physical and psychological survival.

In today's world scholars and statesmen are increasingly brought to the realization that we must develop this "intelligent intelligence" as Camus[5] put it, for it leads to a discriminating awareness and concern for others. It is the need, so vividly

---

is twofold: (1) His assumptions, procedure and conclusions are similar to those of the researchers, and (2) While others have advanced theories similar to Maslow's, clarity demands a single frame of reference yielding a consistent pattern of terminology and concepts. [Abraham Maslow, Motivation and Personality (New York: Harper Brothers, 1954).]

[4] Maslow* notes that his self-actualizing people are willing and able to devote their energies to humanitarian-altruistic causes. C. P. Snow, the British novelist, in an essay entitled "The Future of Man" notes that in societies where there is freedom from poverty and basic needs are met there is more apt to be provision for the disabled add underprivileged. [*Abraham Maslow, "Some Frontier Problems in Psychological Health", Personality Theory and Counseling Practice (Papers presented at the First Annual Conference on Personality Theory and Counseling Practice. University of Florida, January 5-7, 1961, p. 4).]

[5] Albert Camus, Resistance, Rebellion and Death (New York: Alfred A. Knopf, 1961), p. 254.

stated by Gardner[6] in his book Excellence, for the development of responsibility and moral concern. Such individuals may be able to turn away from the pervasive and hollow philosophies of hedonism and materialism to a personal involvement in creating a better world. This movement in positive directions may make it possible for life not only to continue but for it to become better.[7]

To accomplish these goals society must be concerned with the fate, educational and otherwise, of each adolescent and of each group of adolescents. If the commitment to the development of creative citizens is to be more than empty words, a great deal more must be known about the adolescent and his relationships to himself, to his peers, to his school, and to the larger society.[8]

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[6] John W. Gardner, Excellence (New York: Harper and Brothers, 1961).

[7] Introductory comments in this chapter elaborate on this matter of positive directions.

[8] The "whole child" and his needs are often discussed in educational writings but he is rarely dealt with in the classroom and still more rarely studied experimentally. In this research we are committed to the point of view taken by Maslow when he states that in describing human personality, one must use non-Aristotelian logic and the "holistic-dynamic point of view". Essential to this view is an understanding of the implications of the statement: the whole is more than the sum of its parts -- and the applicability of this statement to a description of personality whole. Important implications of this description can be seen in the following example which Maslow cites:

> . . . The syndrome of self-esteem, for instance, has been shown to change as a whole. If we try to change Johnny's stammering and address ourselves specifically to this and this only, the chances are very great that we shall find either (1) that we have changed nothing at all, or else (2) that we have changed not Johnny's stammering

We must re-examine what we teach and how we teach it. The task is not an easy one, but there is information[9] available that can be used to vastly improve the situation in the secondary schools. Our knowledge extends far beyond what we use and apply.

When we meet the needs of our adolescents and when our education is adequate, we will find that every student has a certain capacity to be inventive and to solve problems. We will find that all of our adolescents can learn to communicate and to understand the communications of others. Further, we will find each adolescent developing an ability to comprehend, at his own level of understanding, what is going on about him. He will know and can tell you what school and its subject matter is all about. He will be able to tie things together and to make sense out of what he is doing.[10] In other words, he will be able to perceive, relate to, and cope with the real world.[11] And out of all of this will come self-esteem and a sense of identity.

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alone, but rather Johnny's self-esteem in general, or even Johnny as a whole individual. External influences usually tend to change the whole human being, not just a bit or part of him. (Abraham Maslow, op. cit., p. 29).

[9] J. McV. Hunt, Intelligence and Experience (New York: The Ronald Press Company, 1961).

[10] Jerome S. Bruner, On Knowing (Cambridge: Belknap Press of Harvard University Press, 1962).

[11] David Mallery, The High School Student Speaks Out (New York: Harper and Brothers, 1962).

There are blueprints for this Golden Age, and there are small ventures of great merit that use them. In general, however, efforts lack scale and consistency. We have too many adolescents who are not developing fully, too many whose needs are not met and whose education is inadequate,[12] and too many whose growth and perception have been distorted. The most disadvantaged and poorly taught of these young people are in the schools (often one-third of the student body) but not of them. Many no longer participate, no longer try. Instead they sit this one and the next one "out".

Our problem then is to supply facilitating conditions where all young people will not only want to learn but will also discover that they can learn. For this to happen, learning in general must be meaningful and at times exciting, but it can never be forced. Plato was probably right when he said, ". . . Knowledge acquired under compulsion has no hold on the mind." Rewards from process (the fun of the doing) and product (the delight in the solution) and from audience approval (teacher and classmates) will reinforce the learning and will build self-confidence. Recognition by the schools of the great range of individual learning rates and styles will be a necessary condition. Material must be at an appropriate level and of a meaningful nature, and it must be not only permissible but also safe for ninth graders to study such diverse materials as Classic Comics and Parrington's Main Currents in American Thought.

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[12] 1960 census figures indicate that as many as 54.6 per cent of the Selective Service registrants in some states fail the mental tests.

If we truly want intellectual commitment and an emotional interaction with materials and if we value intellectual process as well as product, our schools must take responsibility for the kind of intellectual activity which occurs in the classroom. We must become aware that what we say we want (self-directing learners) is often disaffirmed by what we do.

Much secondary school work seems to be directed toward only the lower level cognitive processes, such as rote memorization, and to be concerned with product rather than process. Initiative is dulled by recitations that expect students to give pre-framed answers to questions formulated by text or teacher. We seem to forget that students become more involved in learning if they are allowed to fit new ideas into their own mental schemata by asking their own questions and by self-selection of topics.[13] Retention is further enhanced if students are encouraged to test their understandings by using what they have learned in many ways. If they are ever to approximate depth of understanding and become committed to learning, they must be allowed to ask questions of their own framing and express ideas in their own terms.[14] All too rarely do we set the stage for the independent and creative thinking which is essential to the maximum development of learning.

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[13] J. P. Guilford, "The Nature of Intellectual Activity," The Behavioral Sciences and Education (Princeton, New Jersey: College Entrance Examination Board, 1963), p. 72.

Instead, we tend to teach rules for the indefinite pronoun, while many of our students do not learn to write and others already know the rules. We assign from page 10 to page 17 in Great Expectations while many of our students do not learn to read and others have already read the book. We perform an endless number of ritual exercises, memory feats, and other abracadabra, but most of our students are not caught up in the excitement of learning. It is too hard or it is too easy, and for many the very monotony of it all often destroys the desire to learn. Too rarely do we tell them what a subject is all about or ask them what purpose they think it has. As Oscar Handlin has said our students

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[14] This is not a new idea. As Montaigne observed four centuries ago:

> . . . The usual way is to bawl into a pupil's ears as if one were pouring water into a funnel, and the boy's business is simply to repeat what he is told. I would have the tutor amend this state of things, and begin straight away to exercise the mind that he is training, according to its capacities. He should make his pupil taste things, select them, and distinguish them by his own powers of perception. Sometimes he should prepare the way for him, sometimes let him do so for himself. I would not have him start everything and do all the talking, but give his pupil a turn and listen to him. Socrates, and after him Arcesilaus, made his pupils speak first and then spoke to them. "The authority of those who teach is very

spend their time making bricks, but we do not bother to show them plans for the building.[15]

Some time ago the experimenter was working as a consultant in an upper middle class suburban high school, a gold-coast area where the average home had at least two bathrooms. It was suggested that one of the young English teachers ask his students why they took English. No one knew. In desperation he said, "Well, then, you surely know why you take physical education". Again there were no adequate responses. No one suggested that such a course helped one to learn about cooperation or sportsmanship. There were remarks such as, "You can take showers and get clean", a particularly pointless comment in an area filled with two-bathroom homes. At last, in the back of the room a boy put up his hand and, when called upon laconically said, "Well, you gotta know how to do somethin' when you go to the country club".

It is our contention that the all-on-one-level textbook, page-to-page assignments, answer-the-questions-at-the-end-of-the-

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often a hindrance to those who wish to learn." [Cicero, "De Natura Deorum," IV, Michael de Montaigne Essays. J. M. Cohen (translator), Penguin Books, Inc., 1958, pp. 54-55].

[15] Oscar Handlin, "Live Students and Dead Education: Why the High School Must Be Revived," The Atlantic Monthly, Vol. 208, No. 3 (September, 1961), p. 33.

chapter, fill-in-the-blanks-in-the-workbook, and everybody-read-out-loud-round-robin-what-everybody-who-could-read-has-read-before pattern of education is not appropriate. This does not qualify as education in terms of developing either the intellectual or the social-emotional dimensions.

The need for new educational patterns is accentuated by changing conditions within the schools. Thirty years ago approximately thirty per cent of our adolescents were in high school. Today nearly ninety per cent enter.[16] Our economic trends have literally driven the students into high school; there is nothing else for them to do.[17] For the people at the top and at the bottom of the distribution, the ones we might term as "academically talented" and "academically untalented," the education received is most inappropriate as it generally has little relevance to their present or future needs.

The enlarged number of students and the accompanying wider range of abilities have increased the administrative problems involved in providing a learning climate that is both accepting and challenging. The problem seems to be especially critical by the ninth grade level for here the range in achievement of students is tremendous. For this reason, differentiated teaching is more urgently needed here than at other levels. However, even at the first grade level there is often a spread of three or four grade levels and at the fourth grade level the range may be from the primer to the eighth grade level. In the ninth grade we have students who remain virtually non-readers and others who are capable of college work.

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[16] Although ninety per cent enter the ninth grade, two-thirds or less of our eighteen year olds are graduated from high school.

[17] James B. Conant, Slums and Suburbs (New York: McGraw-Hill Book Company, Inc., 1961), p. 24.

The slow learners constitute a particular problem.[18] As Handlin says, ". . . These boys and girls have drifted on into the ninth grade because it follows after the eighth. They are told to study subjects they cannot grasp and to acquire skills they may never use."[19] All too often the schools supply books that retarded readers cannot read[20] and conduct discussions in terms that they cannot understand.[21] Thus the slower students rarely try to read and class discussions are usually dominated by students whose speech is more polished and whose parents have higher status in the community. Perhaps, even more fundamental than the fact that the slow are not developing necessary skills, is that we do not manage to communicate to them the important concepts of our culture.[22] These rounds of purposeless tasks often result in apathy or in outright rebellion. The monotony and the impossibility of it all -- the meaninglessness -- destroy the desire to learn. We do not give them the practice that they need in reading, writing, and speaking. We do not help them to become part of the larger society and to see purpose in it all. We do not "educate" them.

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[18] Such students rarely enter school unwilling to participate socially or intellectually. School means a great deal to all children, especially to adolescents. It is the center of their lives. But when failure cuts too deeply, denial must set in.

[19] Handlin, The Atlantic Monthly, Vol. 208, No. 3, p. 30.

[20] The investigator, as a result of twenty years work in the field of reading and the administration of thousands of individual diagnostic reading tests to retarded readers, estimates that from one-third to one-half of junior high school students in the large cities cannot read their texts.

[21] Furthermore, the subject matter may mean little to them. Seventy per cent of those identified in our study as "slow learners" come from lower class families. Studies on content of textbooks indicate that they are mainly directed toward students from middle class families. Thus our slow learners find that both the language and the experience patterns they bring to school are

Basic needs for success and recognition are not met in such education. Not only are the slow neither recognized nor provided for in the system[23] but they also find little in the way

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largely inappropriate. [See also Martin Mayer, The Schools (New York: Harper and Brothers, 1961), p. 114.]

[22] We do not know that this cannot be done, we only know that it generally is not done. Instead of resorting to skill instruction alone, it is our belief that the teacher must translate certain cultural concepts and that she can teach these in some intellectually honest form to any child at any stage of development. [See also Jerome S. Bruner, The Process of Education (Cambridge: Harvard University Press, 1960).]

[23] Special education programs which provide for the mentally retarded (lower 2-3 per cent of the population) nearly always exclude slow learners.

of acceptance or affection from their more able peers.[24] Even teachers do not find class dullards or social isolates easy to love.[25] In such situations, the slow will not value their thoughts and speak out. They often become so constrained by their low social and intellectual status that they do not overtly rebel. It is more likely that they will sink into inanition. School offers little excitement beyond the noise that rages through the halls between classes and sirens that scream through the streets.[26]

We are failing to meet our responsibility to the slow learners in fundamental areas -- democratic, educational, and psychological. We are denying them the opportunity to develop their individual potential; we are failing to give them the means to relate themselves to and to participate in their culture; and we seem unable to provide an atmosphere which will allow them to become fully developed human beings who can lead meaningful lives.

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[24] N. G. Haring, G. G. Stern, and W. A. Cruickshank, Attitudes of Educators Toward Exceptional Children (Syracuse, New York: Syracuse University Press, 1958), p. 10.

[25] G. O. Johnson, "The Slow Learner," Appendix, p. 178. N. G. Haring, G. G. Stern, and W. A. Cruickshank, Attitudes of Educators Toward Exceptional Children (Syracuse, New York: Syracuse University Press, 1958).

[26] Several years ago the investigator interviewed 114 retarded readers who had recently entered the seventh grade and who were being given third-fourth grade level "adjusted" instruction, i.e., books they could read. They said they liked junior high -- they understood better -- but they particularly liked changing classes -- the noise in the hall, new teachers each period.

This is not to say that the superior students have their needs met in the regular classrooms. Too often for them it is a matter of going along on all fours with everyone else, of hearing the same thing repeated endlessly. The able students complain that they could read the text in a week, but instead they are asked to spend a term on it. They say that "Our teachers teach us what we already know and if we ask questions about something we do not know we are told that this will come next term or next year." One able boy, upon returning to visit his home high school after a year in an outstanding institute of technology, was asked what this high school had done for him. He did not respond immediately but thought for a while and then said, "Well, I can tell you one thing. If you have to do something over enough times and you have to do it slowly enough it can be awfully hard. I think I learned and unlearned factoring a dozen times before I got out of my mathematics course."

Basic needs, or as Maslow terms them, "lower level needs," are usually satisfied for the superior student in our schools and elsewhere but this does not mean that we are supplying adequate motivation. Growth motivation or stimulation for the very able will come mainly in the area of proffered challenge, excitement, and the difficult task.[27]

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[27] The distinction between the "deficiency motivated" individual and the "growth motivated" individual can now be seen as especially relevant to education. The behavior of slow learners is deficiency motivated due, in large part, to the school's inability to accept, recognize, and reward them -- while the superior

Recognition in the usual sense (good grades on examinations and report cards) hold only minimal meaning for students who are effortlessly and continuously successful, both academically and socially. For them, mastery of quite difficult and often self-assigned tasks is far more meaningful. Until the growth motivation of superior students is fostered by our schools, the responsibility for providing opportunities for the fullest development of these individuals cannot be considered fulfilled. Most of them get this outside the school context.

Summary

It is necessary to look again at the commitment of education to that good society which focuses on and facilitates the development of the individual in the most complete sense possible. It is necessary to examine some of our educational structures and procedures, and to attempt to improve this situation where possible. Most slow learners and superior students, for example, do not seem to receive appropriate instruction in the usual heterogeneous class.

Differentiation of instruction, at least within the heterogeneous class, seems particularly difficult to accomplish and appears to be rare at the secondary level. We must re-examine the teaching-learning transaction as it occurs in the secondary school with respect to generally accepted aims, particularly the full development of the individual in moral and intellectual terms.

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students are well on their way toward growth motivation. Thus, not only must the nature of the material differ but also the very atmosphere of the class and the mien and demeanor of the teacher.

Will educational innovation in terms of instructional and grouping changes prove effective in helping accomplish such objectives? The present research is concerned with classroom grouping[28] patterns and accompanying educational adaptations and an evaluation of these.

From the review of studies done on grouping during the past fifty years and as a result of our own earlier studies in this same area, a rationale has been developed to serve as a basis for the present study of classroom grouping, a research model has been suggested to implement this, and questions have been asked to provide us with further information. All of those efforts are toward adding to the fund of knowledge on the adolescent and how

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[28] Grouping is a term which will be used in this study as synonymous with instructional grouping. This process or situation refers to both instruction as it occurs in the classroom, and to the totality or summation of individuals for whom the teacher is responsible for planning at a given time. As Seagoe notes, "The mere presence of grouping introduces social interaction as a part of learning."* The assumption held in this study is that the purpose of classroom grouping, whether by the commonly accepted practice of age groups or by achievement levels, is to facilitate instruction. It is further held that there should be a maximum differentiation of instruction (curricular adaptation) so that individual differences can be met and student learning facilitated.

In the ninth grade situations with which this study deals class groups meet for approximately fifty minutes--our grouping does not refer to all day sessions. We are studying the effects of student achievement range (whether it is narrow as in homogeneous situations or broad as in heterogeneous situations). The homogeneous classes were designed to limit achievement range from between four to five grade levels, whereas in a heterogeneous situation the achievement of the students covered the complete he learns; and with a characteristic sanguinity, we hope that our findings and interpretations will in some small way influence educational practice.

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range found in the ninth grade --at least twelve grade levels.
*[May V. Seagoe, "Some Basic Theoretical Considerations in Grouping" American Psychological Association Convention, (New York: September 2, 1961), p. 2. (Mimeogrpahed.)]

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CHAPTER 2

REVIEW OF RESEARCH

Section A

Research Literature

Educators have long been aware that the diversity of individual abilities, personalities, and needs that exist in a random group of students of a given chronological age raises serious questions about the possibility of a single effective approach for teaching all individuals in such a group. As was noted earlier, the changing nature of the student population at the secondary level has made this problem more acute. For example, the school has more holding power than ever before and this fact contributes to the diversity of achievement levels -- the latter often ranging, by the ninth year of school, from grade one to grade fourteen.

The problem that we face in a democracy is to give everyone an opportunity to learn under conditions that motivate and challenge but do not overwhelm, and to supply everyone with materials that are interesting and understandable but that do not "talk down". It has been suggested by many educators that homogeneous or ability grouping, appropriately handled, will allow students to be with those of their fellows with whom they will feel free to interact and with whom they can find common interests and purposes -- where there can be a meeting of minds. This would seem to be in harmony with both our commitment to democratic ideals and our recognition of individual differences.

Grouping students by ability or achievement patterns is not a novel solution to this problem. It probably developed soon after tutoring became less common as a means of attempting to meet the needs of the individual. Records indicate that grouping had been initiated at least as early as the last half of the nineteenth century in this country.[1] The 1920's and the 1930's were decades of educational innovation and not only did grouping become more common, but the new enterprise of educational experimentation attempted to assess the effects of these programs.[2]

During World War II and its immediate aftermath, there was little experimentation. However, beginning in the 1950's there was an increased amount of attention focused on grouping -- as a practical administrative procedure, as a practice to view experimentally, and as a point of discussion. During the same period, there also was increased concern for individual differences -- especially strong were the concerns for the mentally deficient and other exceptional children. Extensive funds (U. S. Government and State) have been available for research and programs dealing with the retarded. Special programs for the gifted have had little government backing except in science but despite this there has been a modest number in diverse areas and a limited amount of grouping research. Grouping of slow learners is relatively common but funds are usually not available for either curriculum development or research in this area.

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[1] W. T. Harris Plan -- St. Louis, Missouri, 1867. The bright students were promoted rapidly through elementary grades. Cambridge, Massachusetts Plan -- 1891. The bright completed grades 4-9 in four years; the slowest took seven or eight years.

[2] Studies at this time mainly compared achievement gains and, in present day terms, used unsophisticated statistical techniques.

Considering the amount and duration of interest in ability grouping, it might be thought that the issue would be settled by now, having been either adopted as a successful measure or discarded as ineffective. However, school programs have had variable success -- grouping has been considered a beneficial practice by some and a detrimental and undemocratic procedure by others -- and research results have been, at best, inconclusive.[3] It may well be (as can be inferred from the many studies which do not describe or seem to focus on teaching) that there has been insufficient differentiation of teaching and that both research designs and curriculum patterns have been inadequate in rather fundamental ways. In order to make research meaningful we must study useful and sound educational practices -- comparing two situations that are both inadequate is a particuarly fruitless procedure.

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[3] Ruth Ekstrom in her review of important grouping experiments from the 1920's through 1959, reports: "The findings of this survey can be divided into three major groups: (a) thirteen studies which found differences, having or approaching significance, favoring homogeneous grouping, (b) fifteen studies which found no differences in achievement in homogeneous or heterogeneous groups, or which have found homogeneous grouping detrimental, and (c) five studies which gave mixed results, partially favorable and partially unfavorable to homogeneous grouping."

Ekstrom, Ruth B., Experimental Studies of Homogeneous Grouping: A Review of the Literature, Princeton, New Jersey.

The reviews and criticisms of grouping research published in the last five years are remarkably similar to those which were done thirty years ago. This is true in spite of the fact that in social science research the methodology[4] has changed markedly since World War II. Both early and present day reviewers have deplored the overemphasis on achievement testing as a major criteria. They point out the necessity to take into account social and emotional variables, and the need to make appropriate adaptations in instruction and curriculum, and, finally, the obligation to investigate these experimentally. For example, a major criticism with respect to the studies of the 1920's and early 1930's is that they made no effort to control either teaching techniques

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Educational Testing Service, Office of Naval Research Contract Nonr-2214 (00) Project Designation NR 151-174, John W. French, Principal Investigator, April, 1959), p. 26. (Multilith).]

[4] Design and procedure, instruments and data collection, analysis and interpretation.

or modes of presentation of the curricula.[5] Almost three decades later, Ekstrom[6] still found that researchers usually failed to provide differentiation of teaching according to ability level.

The failure to consider and/or adequately measure social and emotional factors has also persisted. In 1934 Wyndham[7] noted that extensive experimental work needed to be done in regard to student attitudes. He felt that the most that could be said at that time was that no experimental evidence was available which supported the contention that ability grouping produces undesirable attitudes on the part of the pupils. Similarly, in her 1962 review of grouping research, we find Goldberg stating: "Although arguments pro and con grouping frequently refer to such changes as work-study habits, social adjustment, attitudes toward learning, self-concepts, and other personal-social behaviors, few efforts have been made to evaluate the effects of grouping on these areas of development."[8]

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[5] W. S. Miller and Henry J. Otto, "Analysis of Experimental Studies in Homogeneous Grouping," *Journal of Educational Research*, 21, January-May, 1930, pp. 75-102.

Austin H. Turney, "The Status of Ability Grouping," *Educational Administration and Supervision*, 17, January and February, 1931, pp. 21-42; 110-127.

[6] Ekstrom, *op. cit.*

[7] Harold S. Wyndham, *Ability Grouping* (Melbourne, Australia: Melbourne University Press, 1934).

[8] Miriam Goldberg and others, "The Effects of Ability Grouping: A Comparative Study of Broad, Medium and Narrow Range Classes in the Elementary School", [(Horace Mann-Lincoln Institute of School Experimentation, Teachers College, Columbia University, New York 27, New York, 1962), p. 116. (Mimeo. first draft).]

In our review of the grouping research we have reached conclusions similar to those of other reviewers, past and present, i.e., the results of grouping research are essentially contradictory and inconsistent. Populations vary as to age, intelligence, and both the socio-economic level and the mixture. Groups selected for study often do not even approximate a cross-section of a normal population.[9] Selection from these diverse populations for inclusion in classroom groups is made on the basis of any of a range of factors such as achievement, ability, grades, interest -- singly or in varying combinations. Methods of assignment to experimental and control groups differ; some try to equate class groups, others do not. Duration of studies vary as do the amounts of time students are kept in a grouping situation during a single day. In some studies the grouping is done in one school subject (and the subject varies from experiment to experiment) and in others students are grouped together all day. Finally, conditions in the classroom have not been specified and methods have not been described (one is left to presume that little goes on that would not have gone on in the prior-to-grouping situation).

Patterns of studying these diverse population and classroom situations also lack comparability. A spirit of individualism rather than conformity marks this particular group of educational researchers. There has been little effort to use uniform measures except in the case of achievement, which is tested by standardized instruments in most studies. The tests themselves are often inappropriate.[10] An English psychologist recently summarized research in educational psychology as "a hodgepodge of ad hoc atheoretical investigations".[11] This may be a harsh indictment but the grouping endeavor does appear to be not only individualistic but also essentially pragmatic.

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[9] There is a question as to the existence of a national norm in a country as heterodox as the United States, but some groups, such as elite private school populations, are certainly less representative than public comprehensive high schools where the average intelligence quotient is about 100.

All but a few studies fail to report basic theory or value systems out of which hypotheses were formed, and some do not even make hypotheses explicit. Often the description of the essential features of a study is too limited to allow replication. The result is that the findings on any given study are hard to evaluate. In the face of all this the only available criterion for the acceptance of a conclusion would be the consistency of results of different investigators. But we can come to no other conclusion, along with Ekstrom, Gross, and others who have reviewed this literature, than that the reported outcomes are contradictory.

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[10] In the great range of achievement levels found at the ninth grade it is important that tests measuring progress should measure it at varying levels of difficulty. This generally means, if an investigator is to test reading, that several instruments at different levels must be used.

[11] F. W. Warburton, "Educational Psychology", Annual Review of Psychology, 1962, (ed.) Paul R. Farnsworth (Palo Alto, California: Annual Reviews, Inc., 1962), pp. 371-414.

Thus, it would appear that generalizations cannot be made with any degree of confidence.

From our survey of this research we can only conclude that efforts to understand grouping have been fragmentary and uncoordinated.[12] Lack of comparability of studies is a serious problem, but an even graver issue is the limited conceptual frame used in evaluating classroom learning. For example, there has been only meager progress in identifying and measuring relevant variables in the social-emotional realm. Similarly, although most researchers seem to agree that one of the main purposes of grouping is to make instruction more appropriate and adapt curricula to individual needs, research has neglected to measure this or even to specify what it means in operational terms. Few references are made to selection, training, and observation of teachers.

Even more fundamental omissions become apparent if we ask questions that seek to understand the learning process in the classroom in a manner that approximates the complexity of the real-life situation. Studies typically do not deal with discussion or other forms of verbal interaction. The classroom is essentially involved with (a) certain types of students, (b) certain situations, and (c) the interaction process -- but we do not get this impression when we read the literature on grouping. The tendency is to deal with only one of these aspects at a time, rarely attempting to understand both the teaching environment and the character of the pupils as learning proceeds and behavior changes.

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[12] Much of this problem may result from the difficulty and expense of doing research that is both comprehensive and uses adequate research strategies.

Our premise is that descriptions of classroom learning and interaction must be both complex and holistic. We accept the ecological view and hold that the classroom as well as nature "must be considered as a whole if it is to be understood in detail." This means that interactions must be unraveled and the effects of isolated variables, when possible, predicted. Studies must be developed in such a way that one can be compared with another. In this manner, parts (separate studies) could merge to represent a whole. Even more desirable than carefully planning a number of small, discrete, but interrelated studies would be a large-scale research endeavor based on a comprehensive and comprehensible model. Such a unitary study would not only provide the opportunity to study an array of variables related to student and situation but, more importantly, would make it possible to see these as they interrelate. Thus the ideal study would place emphasis on the process -- the classroom ecosystem.[13]

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[13] This does not refer to the repetitions of sound, produced by the reflections of sound waves from an obstructing surface -- a distinct possibility but out of context here. Instead the reference is to ecology -- the children, the setting and the interactions.

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CHAPTER 2

REVIEW OF RESEARCH

Section B

Research Related to Development of Present Study

Three experimental studies dealing with the problem of grouping and special teaching in English and social studies were planned and carried through by the experimenter and selected teachers in the years 1954-1955, 1956-1957, and 1957-1958.[1] Superior students at the secondary level were studied in each experiment, and in each case there were equated control groups. Special teaching involved approaches where critical thinking concepts and research methods were introduced to the students. Each experimental teacher tried to develop, in both the individual research reports of the students and in their group discussions, certain problem solving attitudes which included more accurate statements of problems, free formulation of hypotheses, and the critical evaluation of ideas. All experimental teachers were considered by the administrators of their schools to be "good" teachers and some control groups were always placed in the same school with the experimental sections. In the third study comparisons were made between homogeneous groups taught by a seminar approach and heterogeneous classes conducted in the traditional fashion.

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[1] 1954-1955. Experimental Seminar in Critical Thinking (for gifted eighth and ninth graders) taught by Mrs. Norma Lawrie in West Junior High School, Public Schools, Lansing, Michigan. Credit was given in English.

1956-1957. Critical Thinking Seminar (in twelfth grade English, advanced section) taught by Miss Elsie Waldow, Amherst High School, Snyder, New York.

1957-1958. Social Studies Seminars (for superior eighth graders -- a comparison of discussion-type classes with traditional instruction) taught by Mrs. Rosemary Heist in Walter French Junior High School, Mrs. Helen Jacobson in C. W. Otto Junior High School, Mr. Stephen Krebs in West Junior High School, and Mr. Ralph Margolis in Pattengill Junior High School. These schools are part of the Lansing Public School System, Lansing, Michigan.

Results, on the basis of gains made on tests administered, were largely inconclusive. Only in the first two experiments (in each case involving just one teacher) were the gains in achievement and skill areas made by the homogeneous, specially taught groups superior to those made by the control groups. In view of the fact that similar results were not obtained in the third study and since it was felt generalizations could not be drawn from single teacher studies, it was concluded that further research was needed.

The first study, 1954-1955, represented the most complete departure from traditional curriculum. Although called English, the class was conducted as a seminar and topics studied did not follow the curriculum prescription but were instead selected by the students.[2] Grammar was taught only incidentally and was confined strictly to areas of indicated need when a student or students demonstrated specific inadequacies. Gains, based on post-testing in both critical thinking and reading comprehension, were significantly greater (at the 5 per cent level) for the experimental group than for the control groups.

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[2] Students chose for their term projects to work on such topics as: "Peacetime Uses of Atomic Energy," "The Effects on Climate of Nuclear Fission," "Causes of Juvenile Delinquency," "Scientific and Religious Theories of Evolution," and "Beginnings of Abstract Art." High interest was maintained in these chosen

The second study, 1956-1957, also represented a marked departure from the traditional English curriculum. However, a textbook was used as a focus for discussions and the amount of time available to spend on individual research topics was therefore curtailed. The text, Critical Thinking in Reading and Writing by Diederich and Palmer, differed from usual twelfth grade materials in two ways -- it was written for college students with selections that were relatively difficult, and it was designed to stimulate critical thinking. The authors had chosen the readings, selections from literature and philosophy, because of the problems and controversies each posed. Test results showed the experimental group to have made somewhat greater gains on the critical thinking test[3] than the three control groups, one of which was taught by the teacher who worked with the experimental class.

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areas for an entire term and each wanted an hour or more, not just ten minutes, to make his final report.

[3] American Council on Education, A Test of Critical Thinking, Form G., 1952.

At the end of a semester's work the experimental students in both the first and second studies had spent very little time on the regular course content (perhaps a few days during an entire semester) and yet did at least as well on achievement tests[4] designed to measure mastery of curriculum content as did control classes who spent an entire term on traditional subject matter. In the 1954-1955 junior high school study both experimental and control groups tested at thirteenth grade level in English fundamentals at the end of the year. The majority of the twelfth graders in the 1956-1957 study tested above fourteenth grade level (as high as tested ceilings permitted) and the scores on the College Board Examinations for the experimentals were equivalent to those obtained by the controls who had been given specific preparation for these tests.

Both studies involved much preparation on the part of the special teachers. Mrs. Lawrie worked with both the experimenter and with Dr. Paul Dressel, Michigan State University. Miss Waldow met at regular intervals with the experimenter and as a special project made a thorough survey of the literature on critical thinking. Both kept detailed records of class procedures.

The third study, 1957-1958, was done on a larger scale and involved three experimental teachers. As before, the experimental teachers also taught students in the control group, were selected by their administrators as "good" teachers, and participated in a rather extensive training program.[5] Approximately 200 students (the upper 10 per cent, or most able intellectually, of the eighth graders in the Lansing public schools) were used in the study. Approximately half were placed in homogeneous groups and the rest were placed in regular classes, two or three in each class. The experimental teachers differentiated and enlivened their instruction as much as they felt they could in these heterogeneous sections but reported they were unable to teach research techniques or to communicate such concepts as the fundamentals of logic or clues to "fallacies in thinking" to these sections. They also found it difficult to work with small groups and to use many materials beyond the textbook due to the limitations of classroom physical facilities and short class periods.

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[4] In both studies tests in English fundamentals and reading comprehension were used.

Pre- and post-testing included measures in achievement (reading comprehension and social science), critical thinking, dogmatism and rigidity, and creativity; and questionnaires on attitudes and interests. Although this third study did not depart from the usual curriculum content as much as had the first two, the experimental social studies classes made a much greater use of critical discussion and research approaches than did the control classes. An effort was made to teach critical thinking skills indirectly in the regular history units. Additional content, beyond the text, was used as it related to history topics under consideration. However, both experimentals and controls used the assigned eighth grade social studies text. Probably no more than half of the class time was spent on the text by the experimental groups in contrast to a major share of time given to text study in regular classes. However the experimental groups did as well on the achievement tests as the controls. Thus, although the low ceiling on standardized achievement tests prohibited significant results in pre- and post-testing comparisons for superior students, these studies demonstrated that grouping and special teaching incur no measured academic losses even when the amount of time devoted to covering specified curriculum content is reduced.

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[5] The experimenter met with the special teachers for three- to four-hour periods once a week for four months before classes began. During this time an extensive list of materials relating to critical and creative thought was read by each of the teachers.

Dissatisfaction with the limitations of achievement and problem solving tests[6] led to the use of observers to study the process of class discussion and critical thinking. Three observers visited each of the experimental and control classes three times.

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[6] Most available achievement tests, even at advanced levels, have ceilings much too low for able students. Further, the items require mainly memory responses and thus test scores should not be affected by training in critical thinking. We were unable to find a critical thinking test that seemed completely appropriate in content or approach to the goals and activities in the experimental program. However, we used a test that measured some dimensions in which we were interested.

After keeping careful records of the students who participated, the observers attempted to classify the comments made. At each of these observed sessions additional information was obtained by having the teacher rate the performance of each student and having each student in turn comment, in response to open-ended questions, on the discussion in general and his own performance in particular. Observers' records and general impressions, made in both the actual class sessions and later from tapes of the discussions, indicated that there was more thoughtful participation as well as more general involvement in the experimental classes. Measured gains for the experimentals were not significantly different from those of the control groups in achievement and skills, but study of observer records, teacher ratings, and sociometric choices offered clues to differences between the homogeneous and heterogeneous situation. Such information made it clear that, in future studies, we should give much more attention to communication processes and student involvement in and attitudes toward learning.

Moreover, observation and interviews with the students and teachers gave us certain clues as to other gains that might be attributed to homogeneously grouped sections taught by special approaches. It was apparent in all three studies that the superior students in the experimental homogeneous classes chose more abstract and difficult topics for research study and class report than equally able students chose in regular classes.[7] Research reports were written in better style and more carefully documented. Teachers, when asked to comment on the difference in quality, said they were unable to give the superior students in their regular classes the help they needed -- in library techniques and research methodology, for example.

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[7] Students were asked in interviews why this was so and gave two reasons: (1) They had time to pursue such topics since

It was also noted that the level of interest was much higher in the discussions held in homogeneous classes than in oral participation in regular sections. The observers reported that often as many as half the class wanted to talk at once in the experimental groups as against the small number of hands that were usually raised (by superior students) in the control classes. Participation (during one class period) of ninety per cent or more of the students in the special classes was common while in control classes it was rare to have as many as fifty per cent of the students participate.

Finally it was felt that the meetings with the teachers were extremely valuable and should be continued in future work done in the area of grouping. These sessions gave the experimenter an opportunity to learn much about the philosophies and interests of the teachers. In turn they found not only a testing

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"busy work" in the form of copying answers, etc., was minimized; and (2) they felt these more abstract topics would be understood in an advanced section but that they would "lose" their audience in a regular class. It was noted by the observers that students were much more critical of one another's work in homogeneous sections. Fortunately such evaluations did not seem to stem the flow of ideas. Almost everyone participated and most of them wanted to participate most of the time. In Guilford's terms, much divergent thinking occurred.

ground for their ideas, but a place where it was safe for ideas to be formulated and stated. It was noted that teachers tended to spend relatively little time on discussing the traditional academic content and much more time on thinking about learning process in general and the intellectual and social habits of able teen-agers in particular.

Out of these initial efforts the investigator developed firm convictions that, although it was still important to improve and vary assessment measures, to look at student gains as the result of special teaching, and to compare experimental with control groups, there were other dimensions that were crucial to understanding of instructional grouping and the teaching-learning process. Reports of the observers used in the third study and of all of the teachers made it clear that the study of differentiation of instruction and of classroom interaction processes were vital. Such a study, it was concluded, could only proceed when there was close cooperation with the teacher.

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CHAPTER 3

DEVELOPMENT OF FORMAL AND INFORMAL RESEARCH DESIGN

Since the present study was the fourth in a series of grouping studies, many elements of the current design grew out of the experimental work reported above. However, approaches to studying oral participation, self-ratings, and sociometric patterns were developed while this study was in progress.[1] The methods and the ideas that have grown out of social psychology and Maslow's need theories will be used to develop a report of the adolescent and how he learns in his classroom. Thus, in addition to recognizing the importance of including a consideration of teachers, curriculum, school grades, and achievement test scores, we also agree with Tyler[2] that future studies of the school must use a greatly enlarged conceptual model. We had to find or develop tests that would be appropriate for the new secondary school population and for the emerging interdisciplinary research model. We wanted to view as many facets of the adolescent as possible and to study these dimensions, both separately and in interaction. And we did not know with any degree of completeness and finality how such characteristics, as they have been tentatively described, relate to various kinds of academic experience.

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[1] The time frame of the financial support supplied by Cooperative Research (project approved March 15, 1959) did not permit the development of criterion measures of oral participation, rating scales, and sociometric patterns until late in the experimental year. As a result pre-testing in these areas was not possible.

[2] Along with the increase in the proportion of adolescents who remain in secondary school and the concomitant increase in the divergence of the adolescent population to be studied, there has developed a vastly different conceptual model for research in the schools. Tyler (Ralph Tyler, The American College and Student Personality, Social Science Research Council, 1960, p. 68 ff.) reports that twenty-five years ago school and college leaders used

Our problem then was to make meaning out of a complex picture. We wanted to study the individual and his environment and the impact of each on the other. Further we felt that we must examine the effect that a particular teaching process would have on the individual. Obviously, if we took such a route we would be on new ground much of the time and would have to develop many of our instruments as we went along. We had a formal design which used the standardized achievement measures but our objectives

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a very simple model. They studied students, environment, and results. These three major elements remain. However, in the early studies, students were mainly divided into two groups -- those who were prepared to go on (passed their subjects) and those who were not prepared; environment was thought of in terms of teachers and curriculum; and results were the grade-point average and whether a student was a drop-out or not. As Tyler says, ". . . we have begun to enlarge on some of these conceptual developments and enlarge on ways of getting evidence about them." (p. 68).

demanded something more. The decision was to do an exploratory study and designate this as an informal design. The informal design[3] went beyond the stability of our population, our teachers, and our pre-testing battery and became an ever-changing framework reflecting efforts to objectify reporting of conditions and changes that observers and teachers sensed in the adolescent population and in the learning situation.

As a result, we decided to explore approaches that would help us better understand what went on in the classroom. The informal design was developed so that it would remain flexible, particularly in those areas where anticipation and speculation were the only reference or where it was predicted that unexpected variables might arise. Hopefully this type of design would not only answer particular questions and resolve specific problems, it would also open new areas for consideration in such research. Thus the final specification for the study was:

(1) The careful selection of the experimental or sample population and an equally careful assignment of students to experimental and control sections.

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[3] The meaning of each part can be understood only in the context of the whole system. As Weinberg [Harry L. Weinberg, Levels of Knowing and Existence, (New York: Harper and Brothers, 1959), p. 8], says, "One must know the whole before the meanings, and the parts become clear, yet we can learn only one part at a time." Data from this study were collected in many ways and at diverse times but the effort has been to always relate each segment of information to our developing understanding of the student as an entity. Weinberg notes:

In order to do this, our groups were operationally defined, thus permitting replication and making it possible for readers to generalize to their own populations. Further, we used randomized placement to allow for the use of more sophisticated statistical treatment if the data warranted.

(2) An increased range of standardized tests administered. To assess the success or failure of the learning situation under consideration we felt that a wider range of student achievement must be objectified and reported by statistically refined measures. Thus we administered standardized tests of critical thinking and certain attitude variables (dogmatism) to both experimental and control groups. Since these tests were to indicate change (pre- and post-testing) we chose instruments at varying reading levels appropriate to the abilities of the groups being tested. For example, three different forms of the California Reading and Language Tests were administered.

Thus we shall be weaving a complex tapestry: a thread, then a tracing of the thread through a design yet to be woven and only vaguely understood, with the hope that the tenuous understanding thus acquired will reach back and aid the placing of the thread and increase the knowledge of the part it will play in the completed work. (p. 8).

(3) A concern for the selection and training of the experimental teachers and consideration for teaching materials and approaches being employed. It has been our conviction that rather than measuring how classes are usually taught, the concern must be to teach each group (heterogeneous and homogeneous) as well as possible. Therefore, we selected teachers with a given amount of experience (at least three years) who had been designated by school administrators as "good" teachers. Weekly in-service meetings were held with all teachers involved to insure a common philosophy and approach to the experimental situation. Further, since we held, in grouping situations or otherwise, good teaching is differentiated teaching, materials at a variety of reading levels were developed and used to supplement tests. Thus the teachers could conduct classes in ways that appeal to adolescents and make adjustments to the needs of students at various levels.

Due to excellent advice[4] the formal design was developed with a concern for correcting some of the more usual flaws found in grouping research. However, the investigator remained dissatisfied; pre- and post-testing would not deal with the most important issue -- what went on in the classroom. Observations and inferences drawn in the three earlier studies and also an extensive review of the literature in group processes and counseling made it apparent that test scores were inadequate for understanding the basic processes underlying classroom learning. Many of the relevant variables simply could not be dealt with in this kind of design. As a result, we decided to explore approaches that would help us better understand what went on in the classroom.

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[4] Consultant help was offered by Dr. David Krathwohl, Research Coordinator, Bureau of Educational Research, College of Education, Michigan State University, and Dr. Charles Wrigley, Professor of Psychology, Michigan State University.

(4) Observation and evaluation of student performance other than achievement. Since individual learning occurs in a social context, the measurement of student and teacher attitudes (by rating scales or other means) is necessary for the desired comprehensive picture. Sociometric measures had been used previously in some grouping studies, but not with the frequency of other measures such as achievement tests. Many available instruments were crude, and occasionally there were no instruments for the tasks we set; and therefore we developed our own. Thus, results we obtained in the realm of social interplay were expected to be somewhat tentative and our interpretations "studied speculations". We also worked out patterns for looking at student productivity, particularly

verbal interaction during classroom discussions. We provided for and investigated this activity, keeping in mind that any results obtained from observations and attempts at classification would be exploratory.

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PART II

RESEARCH PROCEDURES

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INTRODUCTION

A research design was developed to determine the effect of heterogeneous and homogeneous grouping upon children at three ability levels in ninth grade English classes of the Lansing Public Schools. The sample of superior, average, and slow ninth grade boys and girls was grouped on the basis of IQ and reading language skills. Placement of students in heterogeneous, homogeneous superior, homogeneous slow, and homogeneous average was done by stratified randomization prior to entrance to school in September, 1958.

Questionnaires filled in by the students supplied additional information on birthdate, family size, ordinal status, parents' education, father's occupation, student occupational aspiration, and number of offices held. Much of this information was verified by data obtained from school files. These files also yielded additional information on grade point average, citizenship marks, and attendance. When reading with understanding was a problem, as with the slow learners, students were interviewed and the questionnaire was administered individually. Teachers, school administrators, and parents were also interviewed when there was inadequate or discrepant information.

An attempt to reduce differences in teaching approaches during the school year was made by careful choice of teachers and by a series of discussions in which the teachers and the investigator participated. The influence of school environment and special experiences of certain teachers were partially controlled by rotating and replicating class assignments within the schools.

Test and questionnaire data at the beginning and the end of the year were collected and, in addition, observations were made of three sessions of each experimental class during the year. The information gathered will be presented under two main headings:

Experimental Sample (Chapter 4). In this chapter specifications for the population will be given in terms of ability and achievement test results and other factual material* obtained from student questionnaires and school files. All descriptive data were collected at the beginning of the school year.

Experimental Procedures (Chapter 5). The experimental model, teacher preparations, and curriculum adjustments will be explained and a list of the criterion measures in the formal and informal research designs will be given in this chapter.

Inasmuch as previous studies in psychological research have shown that sex differences are among those necessary to be controlled, much of the data were analyzed separately for boys and girls. Thus possible sex differences in degree and direction were anticipated, and when reverse trends are found they are discussed.

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*Age, ordinal status, family size, socio-economic and parent educational levels, student occupational aspiration, number of offices held, attendance record, grade point averages, and citizenship marks.

Definition of Terms

Homogeneous Grouping -- refers to classes in which students were somewhat similar in achievement levels (reading and language) and in intellectual abilities. For example, it was possible to reduce the range of achievement in a class from twelve years to four or five years. In this report the three groups are arbitrarily designated as superior, average, and slow. The schools used the terms "enriched" or "advanced" instead of "superior", and "adjusted" in preference to "slow". Within this framework there was maximum differentiation of instruction.

Heterogeneous Grouping -- refers to classes made up of students whose achievements covered the complete range found in the ninth grade. To insure that all levels of achievement and intellectual ability would be represented, class assignments were made by using stratified random sampling. Slow and superior students (four to six in each category) were placed in every heterogeneous group.

Slow or Academically Retarded Groups -- were those groups of students whose IQ's fell, in the main, on a group test (the California Mental Maturity Test -- the basis for their original selection), below 90 and who were retarded in verbal achievement. None had been diagnosed by the school psychologists as mentally retarded. After the study began, slow students were given Stanford-Binets and almost half were found to have IQ's in the average range. They were most readily distinguished by poor reading and language skills and all were two or more grades retarded in these areas. The mean was somewhat above fifth grade level, although some were much more retarded. If the mentally retarded students (two or three per cent) placed in special classes had been added to this slow learning group, the total would have comprised the lowest seventeen per cent in verbal achievement in our schools.

Average Groups -- were made up of students whose IQ's fell roughly within plus or minus one standard deviation on a group test, the California Mental Maturity. One out of every three average students was chosen on a random basis, since it would have been impossible to include all ninth graders (almost fifteen hundred) in the study. Reading and language scores ranged from about fifth through tenth grade with the mean for the average students being slightly below ninth grade level.

Superior or Academically Talented Groups -- were comprised mainly of students who had Stanford-Binet IQ's of 120 and above and whose reading and/or language skills were superior. A few were included who had IQ's somewhat below this but who had reading test scores two years above their grade placement level. Reading and language scores ranged from ninth through fourteenth grade level (higher scores are prevented by ceilings on the tests). The mean was about twelfth grade level at the outset and above thirteenth grade level at the conclusion of the experiment. This group generally falls within the highest seventeen per cent in verbal achievement in our schools.

Differentiated Instruction -- was defined as teaching where a maximum effort was made to give the student instructional materials at the appropriate level (third grade books for pupils who read at third grade level) and to take into account student interests. Problems for the individual and the group were chosen from within the broad framework of the curriculum area (ninth grade English) but were "student choices" as much as possible. Much emphasis was placed on discussion as a way to enlist student involvement, improve learning, and foster critical thinking. Teachers used as much differentiated instruction as possible with both homogeneous and heterogeneous groups. It was assumed that such student-centered and individualized teaching might reduce motivational problems.

CHAPTER 4

EXPERIMENTAL SAMPLE

1. Distribution. Table 1 reports both the final or minimum[1] sample of students for whom all major data were completed as well as a larger or maximum sample which includes this final sample in addition to other students originally selected but for whom complete test data could not be obtained. This sample was drawn from a population of ninth grade students in the Lansing Public Schools. All identified able students in the top 10 per cent and all slow students in the bottom 10 per cent (excluding the two to three per cent placed in the mentally handicapped program) were included. One out of three students of the remaining group was chosen on a random basis as a representative average population.

The final or minimum sample for whom all major data were complete included 207 boys and 225 girls, a total of 432 students. Students in this final sample, 101 superior students (36 boys, 65 girls), 251 average students (119 boys, 132 girls), and 80 slow students (52 boys, 28 girls) were among those randomly placed in homogeneous and heterogeneous classes. Homogeneous classes

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[1] All N's for the tables (2-5) in Chapter 4 are the total minimum sample of both homogeneous and heterogeneous groups.

TABLE 1

MAXIMUM AND MINIMUM SAMPLES[a] BY ACHIEVEMENT GROUP AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior		Average		Slow		Total	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Homogeneous								
Boys	36	24	93	56	42	39	157	119
Girls	72	54	95	58	21	20	172	132
Total	108	78	188	114	63	59	359	251
Heterogeneous								
Boys	22	12	82	63	27	13	131	88
Girls	21	11	91	74	9	8	121	93
Total	43	23	173	137	36	21	252	181
Total Sample								
Boys	58	36	161	119	69	52	288	207
Girls	93	65	170	132	30	28	293	225
Total	151	101	361	251	99	80	611	432

[a] The maximum sample (Max.) includes students who were originally assigned to the study. The minimum sample (Min.) includes only those students for whom all major data were complete. The difference between the maximum and minimum samples can be accounted for by dropouts, transfers, schedule conflicts at midyear, and students who were not available for the complete batteries of pre- and post-testing.

included 78 superior students (24 boys, 54 girls), 114 average students (56 boys, 58 girls), and 59 slow students (39 boys, 20 girls). There were 23 superior students (12 boys, 11 girls), 137 average students (63 boys, 74 girls) and 21 slow students (13 boys, 8 girls) from the minimum sample in the heterogeneous classes.

Students were randomly selected from the total sample for homogeneous and heterogeneous classes. There were 27 to 33 students in each class with the exception of the homogeneous classes for slow students which were limited to between 15 and 20 students. Although students were randomly placed in heterogeneous classes, the usual number of superior and slow were increased systematically in order to give a sufficient group N (compare maximum and minimum samples) to make adequate statistical comparisons.

2. Intelligence, Reading Comprehension, and Language Skills.

Table 2 reports the intelligence quotients, reading comprehension, and language skills of the experimental sample.

Intelligence

Intelligence of superior students, as measured on the Stanford-Binet, ranged from 114 to 167, with a mean IQ of 135. The five students with an IQ below 120 had reading test scores at least two years above their grade placement level. IQ's of average students

TABLE 2

MEANS FOR INTELLIGENCE QUOTIENTS, READING COMPREHENSION, AND LANGUAGE GRADE PLACEMENT BY ACHIEVEMENT GROUP AND SEX

	Superior	Average	Slow
Intelligence Quotients			
Boys	134	100	87
Girls	135	99	84
Total	135	100	86
Range	114 - 167	80 - 120	66 - 116
Reading Comprehension			
Boys	11.6	8.4	5.3
Girls	12.0	8.6	5.5
Total	11.9	8.6	5.4
Range	9.0 - 14.3	6.1 - 10.9	2.6 - 7.1
Language Placement			
Boys	11.6	8.2	5.2
Girls	12.7	8.9	5.7
Total	12.3	8.6	5.4
Range	9.7 - 14.7	4.7 - 10.9	2.6 - 7.0

(California Mental Maturity scores[2]) ranged from 80 to 120 with a mean IQ of 100. Students selected as average but with IQ scores below 90 were chosen on the basis of the fact that their reading ability was at grade level. The IQ's of slow students, based on Stanford-Binet ratings, ranged from 66 to 116, with a mean IQ of 86. Although these students were all academically retarded -- often markedly so -- no slow student had been diagnosed by the school psychologists as mentally retarded. The intelligence scores of a number of slow students overlapped those of average students. As was noted earlier, half of them had IQ's within the average range. However, their handicap in reading and language skills generally distinguished them from average students.

Reading Comprehension (California Reading Test)

At the beginning of the ninth grade, the mean reading comprehension grade placement (advanced test form) for superior students was 11.9 with a range of 9.0 to 14.3. The mean reading comprehension grade placement (intermediate test form) for average students was 8.6 with a range of 6.1 to 10.9, while the mean reading comprehension grade placement (elementary test form) for slow students was 5.4 with a range of 2.6 to 7.1.

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[2] Funds were not available for giving individual tests to all students. It was felt that group test IQ's of superior and slow students (falling as they do at the extremes of the distribution) were more apt to be inaccurate. Therefore, superior and slow students were given the individual tests.

Language (California Language Test)

The mean language grade placement (advanced test form) for superior students at the beginning of the ninth grade was 12.3 with a range of 9.7 to 14.7, slightly higher than the reading mean. The mean language grade placement (intermediate test form) for average students was 8.6 identical to the reading mean, with a range of 4.7 to 10.9. For slow students, the mean language grade placement (elementary test form) was also identical to the reading mean, 5.4. The range was 2.6 to 7.0 for this group.

3. Further Descriptive Information

Age, Ordinal Status and Family Size

Although age, ordinal status and family size were not factors considered in the experimental design, the data collected will be included (See Appendix A, p. iv) because it is of interest and relevant to other research presently being done in this area.

An examination of these data shows that superior students were generally more than six months younger than slow students, while average students were four months younger than the slow. The mean age for superior students was fourteen years one month at the beginning of the ninth grade. Mean age for average students was fourteen years four months, and the mean age for slow students was fourteen years eight months (See Appendix A, p. iv). Ordinal status and family size also varied considerably between groups (See Appendix A , p. iv). Superior students were more often first born[3] and from smaller families than were average and slow students. While 47.09 per cent of superior students were first born or only children, only 36.07 per cent of average students and 36.25 per cent of slow students were first born or only children. On the other hand, 32.54 per cent of average and 42.50 per cent of slow students were middle children while only 23.54 per cent of superior students fell into this category. The percentages who were youngest children were similar for the superior and average -- 29.41 per cent of the superior and 31.37 per cent of the average, while 21.25 per cent of the slow students were the youngest. The median family size for superior students was three children. The median family size for slow students was 3.9 children and the median family size of average students fell between these two.

Parent Education and Socio-Economic Status

Table 3 reports parent education and socio-economic status (based on father's occupation) of superior, average, and slow students. The Mann-Whitney U test (with conversion to _z_ scores for large samples) was utilized to determine the level of significance of the differences.[4]

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[3] When the average IQ of the group is relatively higher the proportion of first born and only children usually increases. For example, an earlier study made by the investigator revealed that of 150 boys and girls, all with Stanford-Binet IQ's above 130, 57 per cent were first born. (Elizabeth Monroe Drews, "A Four-Year Study of 150 Gifted Adolescents," Address to American Association for the Advancement of Science, Indianapolis, Indiana, December 26, 1957).

[4] Sidney Siegel, _Nonparametric Statistics for the Behavioral Sciences_, (New York: McGraw-Hill Book Company, Inc., 1956), p. 121.

TABLE 3

MEDIANS FOR PARENT EDUCATION AND SOCIO-ECONOMIC STATUS BY ACHIEVEMENT GROUP[a]

	Superior	$\underline{z}^d$	Average	$\underline{z}^d$	Slow
Father's Education[b]	12.5	7.80[f]	11.5	1.33[e]	10.9
Mother's Education[b]	12.4	4.41[f]	11.8	3.07[f]	11.1
Father's Occupation[c]	3.0	5.21[f]	4.6	2.20[e]	5.1

[a] The Mann-Whitney U Test was applied to a random sample of approximately 80 superior, 120 average, and 60 slow students.

[b] Number of grades completed (e.g., 12.0 indicates graduation from high school).

[c] Warner Scale for father's occupation: the range of this scale extends from 1 (high level professional or business executive) to 7 (unskilled labor or domestic servant). (For full scale, See Appendix C, p. iii.)

[d] two-tailed $\underline{z}$'s.

[e] $p < .05$

[f] $p < .01$

The education for fathers in this population varied among superior, average, and slow students. Fathers of superior students had generally completed high school and some had gone beyond (average grade level completed 12.5), and fathers of average and slow students were less well educated (average grade level completed 11.5 and 10.9, respectively). In the average and slow groups, the median education for mothers was slightly higher than that for fathers. In all comparisons (superior vs. average and average vs. slow) there were significant differences beyond the .05 level for parents' education. With increasing level of student ability we find increasing amounts of parent education.

The median socio-economic status, when the father's occupation was used as the criterion, using the Warner Scale (See Appendix C, p. iii), for superior students was 3.0, for average 4.6 and for slow students 5.1. The difference between the occupation of the fathers of superior and average students was significant at the .01 level, while the difference in the occupation of the fathers between average and slow students was significant at the .05 level.

Occupational Aspiration, Offices Held, and Attendance Record

Table 4 reports the median occupational choice or aspiration, the median number of offices held, and the attendance record for superior, average, and slow boys and girls and totals. The median attendance record was computed for three years of junior high school.

Like their fathers, superior students -- boys and girls alike -- chose higher level occupations than did average and slow students.[5] Although boys and girls differed in degree of increase, every median of occupational choice, irrespective of sex or intelligence level of the student, indicated an increase over the level of father's occupation. The choices of superior students (1.6) were significantly higher than those of average students (2.7), and average students consistently chose higher than slow (3.8). The differences between superior and average and average and slow were significant at the .01 level. The occupational choices of superior girls (1.9) were well below those of superior boys (1.1). While superior boys chose mainly to go into the professions and planned for advanced degrees, superior girls most commonly chose teaching, nursing, etc. When boys and girls were compared in the average and slow groups the differences were small.

Students reported that the majority of offices which they held pertained to school activities. Superior students had held median of 1.1 offices while average students had held 0.3 and slow

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[5] Studies of the occupational choices of high school students usually have placed all of the decisions of all students together and have labelled the trend (which is toward relatively high level choices) "unrealistic" in terms of demands of the labor market. It should be noted that in this study there seems to be considerable realism -- the most able students select the highest level occupations, the average students choose the next highest occupations, and the least able students see themselves as handling the less demanding (in terms of training) jobs.

TABLE 4

MEDIANS FOR STUDENT OCCUPATIONAL CHOICE, NUMBER OF OFFICES HELD, AND ATTENDANCE FOR ACHIEVEMENT GROUPS BY SEX[a]

	Superior	$\underline{z}^{c}$	Average	$\underline{z}^{c}$	Slow
Student Occupational Choice[b] (Grade 9)					
Boys	1.1	3.82^{e}	2.6	2.01^{d}	3.8
Girls	1.9	4.63^{e}	2.8	2.05^{d}	3.6
Total	1.6	5.46^{e}	2.7	2.81^{e}	3.8
Number of Offices Held (Grade 9)					
Boys	0.9	1.98^{d}	0.3	2.49^{d}	0.0
Girls	1.5	3.11^{e}	0.3	1.67^{d}	0.1
Total	1.1	4.02^{e}	0.3	3.08^{e}	0.0
Days Absent (Grades 7-9)					
Boys	8.0	2.42^{e}	17.5	.28	18.5
Girls	14.0	1.91^{d}	20.4	.23	20.0
Total	11.7	2.60^{e}	19.4	.99	18.8

[a] The Mann-Whitney test was applied to a random sample of approximately 80 superior, 120 average, and 60 slow students.

[b] Warner Scale

[c] two-tailed $\underline{z}$'s

[d] $p < .05$

[e] $p < .01$

students did not report holding offices. The difference between each group was significant at the .01 level. Superior girls held the most offices with a median of 1.5, average girls held 0.3 offices and slow girls held 0.1. Boys held fewer offices: superior boys 0.9, average boys 0.3, and slow boys none.

On the preceding variables of social background and occupational choice, the three ability groups remained distinctive. However, as with the intelligence data, the difference between average and slow students was less than the difference between superior and average students.

Although the number of days absent ranged widely within all three groups, the median attendance was similar between average (19.4 days) and slow(18.8 days), the superior students were absent fewer times (11.7 days) than either of the other groups. The difference between superior and average was significant at the .01 level.

Grade Point Average and Citizenship Marks

Table 5 reports grade point average and citizenship marks for superior, average and slow students.

Grade point averages represent a compilation of school marks from grades seven and eight in all subjects. The data are similar to other results -- superior students rating significantly higher than average and average higher than slow. All differences were significant at the .01 level. In each group, girls had somewhat

TABLE 5

MEANS FOR GRADE POINT AVERAGE AND CITIZENSHIP MARKS[a] FOR ACHIEVEMENT GROUPS BY SEX[b]

	Superior	$\underline{t}^c$	Average	$\underline{t}^c$	Slow
Grade Point Average (Grades 7-8)					
Boys	3.28	12.87[d]	2.14	6.87[d]	1.64
Girls	3.56	16.91[d]	2.29	7.92[d]	1.65
Total	3.46	21.45[d]	2.24	10.74[d]	1.64
Citizenship Marks (Grades 7-8)					
Boys	3.14	4.19[d]	2.66	4.71[d]	2.21
Girls	3.73	9.04[d]	2.97	2.74[d]	2.60
Total	3.52	9.55[d]	2.82	5.34[d]	2.36

[a] Grades and citizenship marks given on a four point scale: A = 4, B = 3, C = 2, D = 1.

[b] The Wilcoxon test was applied to a random sample of 78 superior, 114 average, and 59 slow students.

[c] two-tailed $\underline{t}$'s

[d] $p < .01$

higher grades than boys.[6] The mean grade point average for superior boys was 3.28 and for superior girls 3.56, for average boys 2.14 and for average girls 2.29, for slow boys 1.64 and for slow girls 1.65.

Citizenship marks provide a teacher rating of student's attitudes as school members from grades seven and eight in all subjects. As with marks in general, superior students rated significantly higher than average and average higher than slow ($p < .01$), and citizenship marks for girls were consistently higher than those for boys. Means were as follows: superior boys 3.14, superior girls 3.73, average boys 2.66, average girls 2.97, slow boys 2.21, and slow girls 2.60.

Summary

The superior, average, and slow students for this study were selected primarily on the basis of IQ and reading and language skills. The mean IQ for the 101 superior students was 135, for the 251 average students it was 100, and for the 80 slow students 86. Most superior students showed reading and language skills of two or more years beyond their grade level placement. Skills of average students tended to be slightly below grade level placement with a range of approximately two years above and two years below the mean. The reading and language skills of slow students were at least two or more grades below their grade level placement with the mean retardation being three and a half years. The data collected at both the beginning and the end of the year substantiated the view that these were distinct, readily defined groups with only a minimum of overlap on these predetermined criteria.

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[6] Most research studies have indicated that girls rather consistently get better grades throughout their school years. Our study was no exception.

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CHAPTER 5

EXPERIMENTAL PROCEDURES

Experimental Model

Four schools were involved in the experiment. Each school provided two teachers, one "experienced" and one "inexperienced."[1] One of these was assigned to a homogeneous slow group and the other to a homogeneous superior group. Therefore, all teachers taught either a slow or superior homogeneous group with assignments arranged so that four teachers (two "experienced" and two "inexperienced") taught the slow and the same pattern was followed for the superior. Thus, half of the slow groups and half of the superior groups had "experienced" teachers and half did not. In addition, six of the eight teachers (three "experienced" and three "inexperienced") were assigned to average homogeneous groups (which included no slow or superior students). Finally each teacher had a heterogeneous group (complete range of abilities).

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[1] The term "experienced" refers to those teachers who have previously taught homogeneous or grouped sections; "inexperienced" to those who have taught only in heterogeneous classes. The eight teachers were all experienced in the sense of having taught at least three years prior to the experiment and were considered by the school administrators to be good teachers.

TABLE 6

EXPERIMENTAL MODEL

	Schools and Teachers							
Class and Group	**Otto**		**Pattengill**		**West**		**Walter French**	
	A **Exp.**	**B** **Inexp.**	**C** **Exp.**	**D** **Inexp.**	**E** **Exp.**	**F** **Inexp.**	**G** **Exp.**	**H** **Inexp.**
Homogeneous Superior 10 - 14*		X	X			X	X	
Homogeneous Average 7 - 10*	X	X		X	X		X	X
Homogeneous Slow 2 - 6*	X			X	X			X
Heterogeneous 2 - 14*	X	X	X	X	X	X	X	X

***Reading and Language Grade Levels**

Abbreviations:

Exp. = "experienced" teachers.

Inexp. = "inexperienced" teachers.

X = a ninth grade class in English.

Program Development and Classroom Procedure

The experimental teachers met with the investigator for ninety-minute periods every two weeks throughout most of the experimental year. In these discussions, efforts were made to reach a common point of view as to the meaning of differentiated instruction. Teachers also discussed ways of facilitating critical thinking, encouraging originality, and working toward open-mindedness. Ways to achieve these goals and still cover the grammar, literature, and composition required by the curriculum were considered.

Although limitations imposed by the fifty-minute hour, the meeting of five or six classes a day, and the teaching of 150 or more students made it difficult for any teacher to prepare as adequately or differentiate as completely as she would have preferred, each did as much as possible within these boundaries and the additional restriction or freedom of group structures.[2] Teachers appear to make about the same number of discriminations in any single class -- thus three or five levels may be noted and prepared for whether the class has a five-grade range (homogeneous) or a thirteen-grade range (heterogeneous).[3] However, they reported that the homogeneous groups could be taught a unit without doing as much injustice to those at the extremes as they felt happened in heterogeneous classes. Some talked about "coming apart at the seams" in an effort to stretch to the limits of a heterogeneous classroom.[4] Yet despite these problems, the teachers felt they worked equally hard for each class and taught each situation in the best way that their time, energies, skills, and preparation permitted.

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[2] Interviews were used to collect additional information from teachers. A psychologist, using a semi-structured inventory, spent at least two hours with each teacher at the time the study was completed.

[3] In a study of administrators it was found that a given administrator could only deal with a given number of subordinates who must be treated differently. (Lyndall Urwick, "The Manager's Span of Control", Harvard Business Review, Vol. 34, No. 3, May-June, 1956, pp. 40-41).

Adjustments were made in each phase of the teaching of English -- reading, writing, grammar, spelling, as well as in discussion -- the aspect with which this study was particularly concerned. As was mentioned earlier, there was strong agreement with those social philosophers who saw symbolic communication as the most basically human of all qualities. It was further felt that for this process to develop adequately it must be fostered, and that the English class was the most logical place in the school curriculum for such special consideration of communication. Thus, since time did not permit looking with care at all phases of student productivity, attention was particularly concentrated on verbal interchange and the discussion patterns of the several group structures -- superior, average, and slow students in homogeneous and heterogeneous classes.

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[4] Problems relating to fit, the two-way stretch, and the attenuated normal curve.

Attempts were made in the in-service meetings (teachers and investigator) to understand the needs of students of different ability levels and from varying socio-economic backgrounds. There was consensus among the teachers that not all students understood things in the same way and that every effort should be made to diversify instruction and thus to foster maximum understanding. There was further agreement that oral expression, particularly the free expression used in a discussion, helped students to order and clarify their thoughts and that the very organization and expression contributed to retention and future retrieval of the ideas.[5]

More specific patterns for differentiated instruction were worked out in the case of materials to use in the teaching of reading, grammar, and spelling. Generally the average students used the text designated in the curriculum guide while the superior used some of these selections as well as materials of a more advanced nature. The teachers found that superior students could read materials at a level of understanding not often reached by average students. For example, while Richter's Light in the

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[5] This view has recently been stated by Bruner:

> "One can cite a myriad of findings to indicate that any organization of information that reduces the aggregate complexity of material by imbedding it into a cognitive process a person has constructed for himself will make that material more accessible for retrieval." [Jerome S. Bruner, On Knowing -- Essays for the Left Hand, (Cambridge, Massachusetts: Belknap Press of Harvard University Press, 1962)], pp. 95-96.

Forest was just an adventure story for the average, the superior students tended to understand the symbolic meaning as well. The slow could not read ninth grade texts[6] and were given various special materials prepared for teenagers but written with a simplified vocabulary. With all groups there was much use of the library as well as of books and magazines provided in the classroom. The superior students frequently used adult materials (often obtained by the students themselves after school from the public library) and in each school library there was a shelf of easy level, high interest books for the retarded readers. Teachers encouraged the superior students to read magazines such as Saturday Review and Harper's, average students were introduced to The Saturday Evening Post and Reader's Digest (regular edition), while Hot Rod, Popular Mechanics, and Classic Comics proved to be favorites with the slow students. In the case of the slow students such publications were the most popular of all reading materials.

Much of the reading began with or led back into discussions. Teachers reported that reading was done with more zest and purpose if a discussion preceded it, and students felt selections meant more if discussion followed reading. In the superior classes, a book read and mentioned by a classmate usually meant a rush on this title in the library. Interest and enthusiasm were somewhat more difficult to secure and maintain for the slow. For this group, the teacher had to be sure the material was easy enough to be read, that it held interest and that the teaching was done with a great deal of imagination, energy and enthusiasm. The average, as usual, fell in between these two extremes -- lacking the parthenogenesis of the gifted but having more internal resources and needing less "firing" by the teacher than the slow.

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[6] A study done by the writer demonstrated this point. (See Elizabeth Monroe Drews, "Individual Differences: The Basic Problem in Planning a Junior High School Reading Program," The English Record, Vol. VII, No. 2, Winter, 1956, pp. 37-39.)

Theme writing by its very nature allows for diversity of approach, although if a single topic is assigned it must be one that allows for multiple interpretations. Slow students were neither able to nor wanted to write on "Peacetime Uses of Atomic Energy" -- but the gifted were and did. On the other hand both superior and slow students wrote with interest on a topic such as "A Typical Night in the Life of an Alley Cat." (The slow may write on a simple descriptive level about "An Alley Cat I Once Saw" while the superior student may see within the cat's trials and ecstacies a moving panorama of human problems with a message, if not a style, similar to that of Don Marquis when he wrote of Mehitabel the cat and her encounters with conscience as interpreted by the cockroach philosopher, Archie.)

Teachers found their approaches to evaluation had to vary greatly with the different levels of competency. (A retarded reader is usually even more severely retarded in writing and the use of spelling and grammar.) Slow students were felt to be "making progress" if they learned to write a complete sentence. Superior students had little trouble with form but often were too constrained by the straight-jacket of previously learned formula and lacked freshness in style. With any student it was found that a few corrections could be taken in stride and used to good advantage in subsequent writing but that many corrections tended to inhibit and confuse. Similarly a recitation of rules as a prelude to writing tended to reduce interest and output while a free-flowing discussion on topics of interest tended to release ideas and to foster productivity.

Teaching grammar and spelling proved to be similar to teaching reading in terms of the difficulty of adapting material to the needs of individuals. Slow students who could barely write a complete sentence could neither spell nor understand a concept such as "the subjunctive." Grammar from a ninth grade textbook was quite beyond a student who read only at fifth grade level and whose actual comprehension of language structure and whose spelling skill was even more inadequate. Similarly a ninth grade spelling list could not be used with a student who could not read the words.[7] Superior students, usually encountered other kinds of problems with ninth grade grammar and spelling. Generally speaking they already wrote without serious grammatical errors and were able to spell most ninth grade words on pre-tests; thus the teachers did not drill on what was already known in the homogeneous classes. Some went far beyond prescribed ninth grade material in the study of the structure of the English language. However, such special work was usually not possible in the heterogeneous classes.

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[7] The fact that such feats are said to be common occurrences seem to us to be more within the realm of legerdemain or self-mesmerism than within the province of teaching.

Criterion Measures

Criterion measures were of two general kinds: standardized tests and measures of a more informal nature including observational methods, attitude scales, and surveys. Data under these two categories will be reported under two general divisions, one related to the formal research design and the other concerned with the informal research design.[8] The study as originally planned (formal design) called for pre- and post-testing on standardized measures, and thus allowed for a study of post-test differences in terms of dependent variables making possible the use of standard psychometric approaches. Many of the variables that emerged in the exploratory aspects of the study were, of course, introduced after the research was underway, and, therefore, pre-testing was not possible.[9] Most informal measures were used only in post-testing. Results are usually reported in comparative descriptive terms although statistical techniques, both parametric and non-parametric, were applied as the data warranted. The following were the measures employed:

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[8] A more complete description of the development of the formal and informal design is found in Part I, Chapter 3, "Development of Formal and Informal Design."

[9] The only exception was when questions were included in the initial survey (which was largely used to describe the population).

I. Standardized tests used in the formal research design.

A. Superior or academically talented students:

1. California Achievement Tests, Language, Advanced Form
2. California Achievement Tests, Reading, Advanced Form
3. American Council on Education, Critical Thinking, Form G
4. Rokeach Dogmatism Scale

B. Average students:

Tests were given in the same areas, but only in the case of Rokeach was the test identical. In the case of the two California Tests, the intermediate form was given and the Michigan State University, Problem Solving, Form B was substituted for the ACE Critical Thinking Test.

C. Slow or academically retarded students:

With this group the elementary form of the California tests was used. To supplement this group test information, an individual reading test, the Durrell Analysis of Reading Difficulty, was administered. Due to the readability level, the Rokeach Dogmatism tests could not be used. Furthermore, there was no test of problem-solving of an appropriate difficulty level that was comparable to the one used for superior and average students.

II. Measures used in the informal research design

Observation techniques, content analysis of tape recordings and typescripts, sociometric tests, rating scales for teachers and students, and open-question surveys were used for superior, average and slow students.

More detailed descriptions of these measures will be given in the introduction to each chapter in Part III which will report the findings and interpretation. All the instruments used in this study are in the Appendix and as the variables are reported, reference is made to the instrument from which the item under consideration was taken.

Summary

The experimental procedure involved carefully delineated groups taken from the entire ninth grade in the Lansing Public Schools. Placement of all students had been done by stratified randomization prior to the experimental year. Achievement, thinking skill, and dogmatism tests were selected for pre- and post-measures. These data were to be augmented by the ratings and opinions of the observers, the teachers, and the children themselves. Efforts were made to reduce the effect of teacher differences by having the same teacher teach both a homogeneous and a heterogeneous class. Teachers were similar in certain respects -- all had had formal training in English, all were chosen as good teachers by the school administration, all had taught previously in Lansing (although only half had taught homogeneous groups and were in this sense "experienced"), and all (along with the investigator), participated in a series of discussions attempting to establish a fairly common philosophy on teaching approaches and education in general.

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PART III

FINDINGS AND INTERPRETATIONS

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CHAPTER 6

ASSESSMENT MEASURES

Introduction

One of the major concerns in this grouping research was whether or not the division of students into superior, average, and slow homogeneous classes would facilitate greater academic development and productivity of the individual student. Consequently, we were interested in determining whether the homogeneous groupings and the special materials and methods would result in academic productivity and achievement scores significantly different from those that were a function of the materials and methods that could be adapted for use in a heterogeneous group structure. One criterion of such a difference might be the standardized achievement test.

Despite the fact that past research suggests caution in predicting significantly higher achievement test scores as the result of special treatment, it was felt that achievement test data should be studied in this research to complement the other questions being investigated. Hence, the appropriate levels of the reading and language tests were administered to all students in the study at the beginning and at the end of the experimental year. The critical thinking and problem solving tests and the dogmatism measures were administered only to superior and average students respectively at these times.

Group differences on standard achievement measures obtained by comparing one treatment with another vary as the review of research indicates. Our previous studies of classroom discussion and of adaptations of instructional practices indicate that these tests, although supplying information as to learning status, may not be good instruments to use when studying the intellectual growth process. This point will be further considered in the discussion section.

Results

Analysis

Means were computed for reading and language scores[1] of superior, average, and slow boys and girls (sexes separately and combined) in homogeneous and heterogeneous classes, and for critical thinking and problem solving tests scores of superior and average boys and girls (separately and combined) in homogeneous and heterogeneous classes at the beginning (pre-testing) and end (post-testing) of the experimental year.[2] Means were also computed for dogmatism test scores using the same groupings as were used for the critical thinking and problem solving. The significance of the differences between the mean scores of homogeneously and heterogeneously placed superior, average, and slow boys and girls were determined by *t*-tests.

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[1] The scores of reading comprehension and language tests were converted to school years (in ten month units) for presentation in these tables.

Reading Comprehension (Table 7)

The mean grade placements in reading comprehension for superior students at pre-testing were 11-5 for boys and 12-1 for girls in homogeneous classes, and 11-9 for boys and 11-7 for girls in heterogeneous classes. Combined means at pre-testing were 11-9 for superior students in homogeneous classes and 11-8 for superior students in heterogeneous classes.

At post-testing, the mean grade placements in reading comprehension for superior students were 12-7 for boys and 13-0 for girls in homogeneous classes, and 13-2 both for boys and for girls in heterogeneous classes. Combined means at post-testing were 12-9 for homogeneous classes and 13-2 for heterogeneous classes. At neither the beginning nor the end of the experimental year were any significant differences found in reading comprehension scores of superior boys and girls comparing homogeneous and heterogeneous classes.

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[2] All N's for the tables in this section are the minimum sample (See Chapter 4, p.58).

TABLE 7

COMPARISON OF MEAN GRADE PLACEMENT IN READING COMPREHENSION BY ACHIEVEMENT GROUP AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES[a]

	Superior (Advanced)[b]			Average (Intermediate)[b]			Slow (Elementary)[b]		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Pre-Testing									
Homogeneous	11-5	12-1	11-9	8-5	8-4	8-5	5-4	5-6	5-4
Heterogeneous	11-9	11-7	11-8	8-5	8-7	8-6	5-4	5-4	5-4
$\underline{t}^c$	.81	.77	.28	.19	.93	.62	.31	1.06	.23
Post-Testing									
Homogeneous	12-7	13-0	12-9	9-2	9-3	9-2	5-8	5-9	5-8
Heterogeneous	13-2	13-2	13-2	8-8	9-5	9-1	5-8	6-0	5-9
$\underline{t}^c$	1.51	.51	1.40	.57	.54	.48	.04	.49	.27

[a] The test scores are converted to ten month school years. The original data were analyzed in score form.

[b] "Advanced," "Intermediate," and "Elementary" indicate forms of the California Reading Comprehension Test.

[c] None of the differences is significant at level $p < .05$ for two-tailed $\underline{t}$'s.

The improvements in reading comprehension mean grade placement of superior students ranged from nine months, or the equivalent of almost one school year, for superior girls in homogeneous classes to one year and five months for superior girls in heterogeneous classes. Boys in homogeneous and heterogeneous classes improved by more than one year. Superior girls, as a total group, continued to score slightly higher than superior boys[3] in reading comprehension grade placement.

For average students at pre-testing, the mean grade placements in reading comprehension scores were 8-5 for boys and 8-4 for girls in homogeneous classes, and 8-5 for boys and 8-7 for girls in heterogeneous classes. Combined means at pre-testing were 8-5 for average students in homogeneous classes and 8-6 for average students in heterogeneous classes.

At post-testing, the mean grade placements in reading comprehension scores for average students were 9-2 for boys and 9-3 for girls in homogeneous classes, and 8-8 for boys and 9-5 for girls in heterogeneous classes. Combined means at post-testing were 9-2 for homogeneous classes and 9-1 for heterogeneous classes. No significant differences were found in the reading comprehension scores of average boys and girls when homogeneous and heterogeneous classes were compared at either the beginning or the end of the experimental year.

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[3] Maximum gains could not be shown for either sex, since many students tested at the upper limits of the reading test.

The improvements in reading comprehension mean grade placement of average students ranged from three months (average boys in heterogeneous classes) to nine months (average girls in homogeneous classes). Average girls tended to score slightly higher than average boys in comparable groups.

For slow students at pre-testing, the mean grade placements in reading comprehension were 5-4 for boys and 5-6 for girls in homogeneous classes, and 5-4 for both boys and girls in heterogeneous classes. Combined means at pre-testing were 5-4 for slow students[4] in both homogeneous and heterogeneous classes.

At post-testing, the mean grade placements in reading comprehension for slow students were 5-8 for boys and 5-9 for girls in homogeneous classes, and 5-8 for boys and 6-0 for girls in heterogeneous classes. Combined means at post-testing were 5-8 for homogeneous classes and 5-9 for heterogeneous classes. There were no significant differences in reading comprehension scores of slow boys and girls comparing homogeneous and heterogeneous classes at either the beginning or the end of the experimental year.

The improvements in reading comprehension grade placement of slow students ranged from three months (slow girls in homogeneous classes) to six months (slow girls in heterogeneous classes). Slow girls scored from none to two months higher than slow boys in comparable groups.

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[4] This is a reading score roughly comparable to that reported for mentally retarded students of the same age.

Language -- Mechanics and Grammar (Table 8)

In language scores, the mean grade placements for superior students at pre-testing were 11-4 for boys and 12-7 for girls in homogeneous classes, and 12-1 for boys and 12-8 for girls in heterogeneous classes. Combined means at pre-testing were 12-3 for superior students in homogeneous classes and 12-4 for superior students in heterogeneous classes.

At post-testing, the mean grade placements in language for superior students were 11-9 for boys and 12-9 for girls in homogeneous classes, and 12-2 for boys and 13-4 for girls in heterogeneous classes. Combined means at post-testing were 12-6 for superior students in homogeneous classes and 12-7 for superior students in heterogeneous classes. No significant differences were found in language scores of superior boys and girls when homogeneous and heterogeneous classes were compared at either the beginning or the end of the experimental year.

The improvements in language grade placement of superior students ranged from one month (superior boys in heterogeneous classes) to six months (superior girls in heterogeneous classes). Superior girls scored from seven to thirteen months higher than superior boys[5] in comparable groups.

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[5] Maximum gains could not be shown for either sex since many students tested at the upper limits of the reading test.

TABLE 8

COMPARISON OF MEAN GRADE PLACEMENT IN LANGUAGE BY ACHIEVEMENT GROUP AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES[a]

	Superior (Advanced)[b]			Average (Intermediate)[b]			Slow (Elementary)[b]		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Pre-Testing									
Homogeneous	11-4	12-7	12-3	8-4	8-9	8-6	5-2	5-6	5-4
Heterogeneous	12-1	12-8	12-4	8-1	8-9	8-5	5-2	5-9	5-5
t[c]	1.96	.22	.43	1.62	.06	1.01	.29	1.05	.49
Post-Testing									
Homogeneous	11-9	12-9	12-6	8-4	9-0	8-7	5-6	5-9	5-7
Heterogeneous	12-2	13-4	12-7	8-2	9-3	8-7	5-5	6-3	5-8
t[c]	.57	1.51	.06	.99	1.47	.31	.68	1.46	.32

[a] The test scores are converted to ten month school years. The original data were analyzed in score form.

[b] "Advanced," "Intermediate," and "Elementary" indicate forms of the California Language Test (Mechanics of English and Grammar).

[c] None of the differences is significant at level $p < .05$ on two-tailed *t*'s.

For average students at pre-testing, the mean grade placements in language were 8-4 for boys and 8-9 for girls in homogeneous classes, and 8-1 for boys and 8-9 for girls in heterogeneous classes. Combined means at pre-testing were 8-6 for average students in homogeneous classes, and 8-5 for average students in heterogeneous classes.

At post-testing, the mean grade placements in language for average students were 8-4 for boys and 9-0 for girls in homogeneous classes, and 8-2 for boys and 9-3 for girls in heterogeneous classes. Combined means at post-testing were 8-7 for average students in both homogeneous and heterogeneous classes. There were no significant differences in language scores of average boys and girls when homogeneous and heterogeneous classes were compared at the beginning or the end of the experimental year.

The improvements in language mean grade placement of average students ranged from no improvement (average boys in homogeneous classes) to four months (average girls in heterogeneous classes). Average girls scored from five months to thirteen months higher than average boys in comparable groups.

For slow students at pre-testing, the mean grade placements in language were 5-2 for boys and 5-6 for girls in homogeneous classes, and 5-2 for boys and 5-9 for girls in heterogeneous classes. Combined means at pre-testing were 5-4 for slow students in homogeneous classes and 5-5 for slow students in heterogeneous classes.

At post-testing, the mean grade placements in language for slow students were 5-6 for boys and 5-9 for girls in homogeneous classes, and 5-5 for boys and 6-3 for girls in heterogeneous classes. Combined means at post-testing were 5-7 for slow students in homogeneous classes and 5-8 for slow students in heterogeneous classes. At neither the beginning nor the end of the experimental year were any significant differences found in language scores of slow boys and girls comparing homogeneous and heterogeneous classes.

The improvements in language mean grade placement of slow students ranged from three months (for both homogeneous girls and heterogeneous boys) to four months (for both homogeneous boys and heterogeneous girls). Slow girls scored from three to eight months higher than slow boys in comparable groups.

Critical Thinking and Problem Solving (Table 9)

In critical thinking, the mean scores for superior students at pre-testing were 27.16 for boys and 29.09 for girls in homogeneous classes, and 26.58 for boys and 28.00 for girls in heterogeneous classes.[6] Combined means at pre-testing were 28.50 for superior students in homogeneous classes and 27.26 for superior students in heterogeneous classes.

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[6] A high score indicates better skills in the area of critical thinking (See Appendix B, p.iii, for norms).

TABLE 9

COMPARISON OF MEAN SCORES ON CRITICAL THINKING AND PROBLEM SOLVING TESTS BY SUPERIOR AND AVERAGE GROUPS AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior (Critical Thinking, Form G)			Average (Problem Solving, Form B)		
	Boys	Girls	Total	Boys	Girls	Total
Pre-Testing						
Homogeneous	27.16	29.09	28.50	18.89	18.09	18.49
Heterogeneous	26.58	28.00	27.26	19.47	19.37	19.42
t*	.30	.60	.95	.69	1.68	1.65
Post-Testing						
Homogeneous	30.71	33.98	32.99	21.81	20.09	21.10
Heterogeneous	31.75	34.45	33.04	20.43	20.99	20.73
t*	.49	.25	.04	1.54	1.23	.37

*None of the differences is significant at level $p < .05$ for two-tailed t's.

At post-testing, the mean scores in critical thinking for superior students were 30.71 for boys and 33.98 for girls in homogeneous classes, and 31.75 for boys and 34.45 for girls in heterogeneous classes. Combined means at post-testing were 32.99 for superior students in homogeneous classes and 33.04 for superior students in heterogeneous classes. There were no significant differences in critical thinking scores of superior boys and girls when homogeneous and heterogeneous classes were compared at the beginning or the end of the experimental year.

For average students at pre-testing, the mean scores in problem solving were 18.89 for boys and 18.09 for girls in homogeneous classes, and 19.47 for boys and 19.37 for girls in heterogeneous classes.[7] Combined means at pre-testing were 18.49 for average students in homogeneous classes and 19.42 for average students in heterogeneous classes.

At post-testing, the mean scores in problem solving for average students were 21.81 for boys and 20.09 for girls in homogeneous classes, and 20.43 for boys and 20.99 for girls in heterogeneous classes. Combined means at post-testing were 21.10 for average students in homogeneous classes and 20.73 for average students in heterogeneous classes. There were no significant differences in problem solving scores of average boys, girls or totals when homogeneous and heterogeneous classes were compared at the beginning or the end of the experimental year.

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[7] A high score indicates better skills in the area of Problem Solving (See Appendix B , p.v)

Superior and average students had higher scores on critical thinking and problem solving tests, respectively, at the end of the experimental year than at the beginning of the experimental year. Superior girls scored higher than superior boys in comparable groups. This sex difference was not present among average students.

Dogmatism Scale (Table 10)

In dogmatism, the mean scores for superior students at pre-testing were 167.58 for boys and 159.73 for girls in homogeneous classes, and 166.50 for boys and 149.36 for girls in heterogeneous classes.[8] Combined means at pre-testing were 162.11 for superior students in homogeneous classes and 158.30 for superior students in heterogeneous classes.

At post-testing, the mean scores in dogmatism for superior students were 158.29 for boys and 153.84 for girls in homogeneous classes, and 153.17 for boys and 142.45 for girls in heterogeneous classes. Combined means at post-testing were 155.19 for superior students in homogeneous classes and 147.99 for superior students in heterogeneous classes. There were no significant differences in dogmatism scores of superior boys and girls when homogeneous and heterogeneous classes were compared at the beginning or at the end of the experimental year.

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[8] The Rokeach Dogmatism Scale was used, a high score indicates a more dogmatic attitude (See Appendix B p. iv, for norms).

TABLE 10

COMPARISON OF MEAN SCORES ON DOGMATISM SCALE BY SUPERIOR AND AVERAGE GROUPS AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior			Average		
	Boys	Girls	Total	Boys	Girls	Total
Pre-Testing						
Homogeneous	167.58	159.73	162.11	176.81	177.40	177.10
Heterogeneous	166.50	149.36	158.30	181.46	175.85	178.46
t*	.15	1.59	.77	1.34	.36	.45
Post-Testing						
Homogeneous	158.29	153.84	155.19	174.12	174.91	174.52
Heterogeneous	153.17	142.45	147.99	177.49	172.85	175.01
t*	.78	1.71	1.54	.70	.44	.15

*None of the differences is significant at level $p < .05$ for two-tailed t's.

At pre-testing the mean scores in dogmatism for average students were 176.81 for boys and 177.40 for girls in homogeneous, and 181.46 for boys and 175.85 for girls in heterogeneous classes. Combined means at pre-testing were 177.10 for average students in homogeneous classes and 178.46 for average students in heterogeneous classes.

At post-testing, the mean scores in dogmatism for average students were 174.12 for boys and 174.91 for girls in homogeneous classes and 177.49 for boys and 172.85 for girls in heterogeneous classes. Combined means at post-testing were 174.52 for average students in homogeneous classes and 175.01 for average students in heterogeneous classes. There were no significant differences in dogmatism scores of average boys, girls or totals comparing homogeneous and heterogeneous classes at the beginning or the end of the experimental year.

Superior and average students had lower scores on the test of dogmatism at the end of the experimental year than at the beginning of the year. Superior girls scored lower than superior boys, i.e., were less dogmatic, in comparable groups. This apparent sex difference was not present among the average students. Average students, as a group, were more dogmatic than superior students.

Summary

Tests of reading comprehension and language were administered to superior, average, and slow students, as well as a test of dogmatism to only the superior and average groups, in homogeneous and heterogeneous classes at the beginning and end of the experimental year. In addition, a test of critical thinking was administered to superior students in homogeneous and heterogeneous classes at the beginning and end of the experimental year, and a test of problem solving was administered to average students in homogeneous and heterogeneous classes at the beginning and end of the experimental year. The comparisons of superior, average, and slow students in homogeneous and heterogeneous classes showed no consistently significant differences for any group on any test at either the beginning or the end of the experimental year. Thus the answer to the question posed at the beginning of this section is that placement in homogeneous classes did not significantly change the relative achievement status of any group as tested by these measures.

Discussion and Implications

The fact that there were no significant differences in increased amount of achievement between homogeneously and heterogeneously placed superior, average, and slow students during the school year was not a complete surprise. Our own previous studies and those made by others had indicated that significant gain differences on achievement tests between an experimental group receiving special treatment and a control group were often not obtained. Upon completion of classroom observations and the study of student and teacher attitudes during classroom activities, we seriously doubted that the achievement tests measured the kind of student learning with which we were primarily concerned. However, we had initially planned this study in the pattern (with certain modifications) of other grouping studies and were committed, by our formal design, to this approach. Further, our research was designed with and for the public schools and it seemed appropriate that we use conventional and accepted measures for at least part of a study which was to be unconventional in many respects. We felt that as teachers we should begin "where the students are," so we should begin our grouping study by referring to and employing the findings of previous research.

However, even achievement testing was not carried out in an entirely conventional manner. As was mentioned earlier, tests were administered at three levels to prevent the "bunching" of superior students at one end and slow students at the other end of a single achievement continuum. Distortion of both ends occurs when a single test, designed for the average, is used for the full range of students. Thus, high school level tests were given to superior students to provide a middle range for this group and elementary level tests were given to the slow students for the same reason. Thus clustering at both ends was to some extent avoided. Further, critical thinking and problem solving tests were given to add a dimension beyond that obtained in the usual language and reading tests. Again we were not completely satisfied with the instruments but we did feel that the dimension was important and the tests we used were the most appropriate of any available to us.

Repeatedly we meet in the aims of education the goal, "teaching to think," yet our measures of school achievement are not designed to determine whether or not this is being done. Essentially, achievement tests sample knowledge of content and not facility with a process such as thinking. In other words, they sample the lower-order cognitive processes such as retention of facts rather than higher-order processes such as critical and creative thought. They also, in terms of content, probably sample only a small portion of what is learned during a school year. For example, achievement tests in no way sampled the learning that transpired in the units where we discussed juvenile delinquency. In short, these tests measured a small portion of content, divorced from learning context and process.

Able students, as we discovered in our earlier studies, master the facts prescribed by curriculum or contained in the typical textbook in a relatively short time. General information tests would be needed to give us only a vague idea of how much more subject matter of a factual nature is learned in an entire term. Even then we would not know about the development of thought processes in the students.

Slow students also seem to be learning much that achievement tests do not measure. In the accepting environment supplied by our teachers and the relative freedom provided by discussions, the slow student sets his own directions and often has an opportunity to choose his own kinds of learning. At least the direction that his comments might take in discussion seemed relatively open.

With this freedom, supplemented by an atmosphere which might be called nurturing (recognition, success, affection), these students blossom in ways that are more important to them than the learning of English grammar rules. School achievement is probably of little concern to these lower-class, academically limited students to whom gaining an identity and developing self-esteem is still such an all important task. Perhaps when certain basic needs are met these students will have the desire for more active involvement in academics. Here again we are assuming that material typically taught in English courses is considered to be intrinsically valuable and interesting to our slow students. In fact, they responded most positively to those aspects of the adjusted class that the curriculum of heterogeneous ninth grade English classes does not offer -- discussion and reading magazines. Again, the achievement tests failed to indicate or measure the results of this type of student activity.

It was indicated earlier that we did not feel that the critical thinking and problem solving tests used with superior and average students were completely appropriate. The problems dealt with in the tests were not like those discussed in the English classes. However, it was felt that free discussion might improve such general skills as critical thinking and problem solving.

At the outset of this study we felt that the concept of achievement must be expanded, a view which we accepted more completely as our work progressed. As we have already indicated, recent theories in psychology, expecially Maslow's concept of growth and deficiency motivation and Rogers' premises with respect to "student-centered" teaching, as well as the emphasis that is being placed on creativity and thinking process (as opposed to fact-level content) in education, make it imperative that we consider different kinds of student productivity. We felt that exploratory studies, ours and others, must deal with many dimensions, but always with the recognition that these areas will be difficult to describe objectively and to test quantitatively. Rogers reported similar concerns when he considered the results of experimental "student-centered" teaching. He noted that ". . . because the quality of learning which frequently resulted was so different from that taking place in the ordinary classroom, further experimentation seemed unquestionably demanded.[9]

Although we cannot pretend to describe all the dimensions of classroom learning, we feel that there are distinct and important kinds of productivity that students at different ability levels achieve with appropriate challenge and freedom. We feel that these are best achieved and most rewarding to the individual student when they are appropriate for him. Superior students seemed to be largely growth motivated and to have much of what

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[9] Carl R. Rogers, Client-Centered Therapy (New York: Houghton Mifflin Company, 1951), p. 384.

White calls "Drive for Mastery."[10] They liked difficult materials and sought out encounter with new ideas. They had, for the most part made the transition from concrete to abstract cognitive functioning, and the use of generalizations and theories was often apparent in the verbal interplay. When free choice was allowed, the books read were most often at an adult level and topics for papers and class discussion were often complex and large-scale.

Slow students, deficiency motivated and with their strong needs to be accepted and recognized, moved toward participation of a nature that satisfied these basic needs and allowed them to perceive themselves as acceptable to both peers and teachers. Teacher presentation worked best if there were concrete props. Discussions went well if abstractions were avoided. Slow students tended to select topics which were reality-bound (of a concrete, descriptive nature) -- whether these interests were to be pursued by reading books, by developing projects, by preparing and giving reports, or in discussions.

All adolescents, as Ohlsen and Proff point out, ". . . appreciate the opportunity to exchange ideas with peers in a permissive and accepting group" and, also important, prefer the assistance of peers over all others ". . . in solving their problems."[11] This is true whether these young people are slow, average, or superior and whether they are deficiency or growth motivated. By creating an atmosphere of acceptance and trust, the teacher encourages her slow students to express themselves effectively in situations where the respect from peers is possible. For the superior student, classroom discussions also allow for appropriate modes of thought and expression.

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[10] Robert White, "Motivation Reconsidered: The concept of Competence," Psychological Review, 56, pp. 297-333.

[11] Merle M. Ohlsen and Fred C. Proff, The Extent to Which Group Counseling Improves the Academic and Personal Adjustment of Under-Achieving Gifted Adolescents. Cooperative Research Project No. 623, 1960, p. 2.

It was believed that a study of these classroom discussions, especially since the students were free to participate or not as they chose, would indicate not only the degree of involvement but also how the student had incorporated the content of the topic under consideration into the context of his thought. Thus, the informal research that was planned to extend our understanding of school achievement and student learning would give us a view of the on-going process. It would also give us an opportunity to study the cooperative aspects of learning. Discussion, in the best sense, could be a sharing and could supply opportunities for clarifying individual thoughts as well as helping to motivate others. Judged always in terms of a class distribution, competitive tests and papers rarely foster the development of group spirit and they generally lower the morale of those who do poorly.

In summary, there were no significant differences in achievement (in terms of curriculum content) as measured by achievement tests, between homogeneously and heterogeneously placed superior, average, and slow students during the school year. Since the tests available were mainly concerned with facts learned and did not tap higher cognitive learnings nor the interactions of the individual and the situation, we did not feel that the study of learning as it relates to instructional grouping and differentiated teaching should be abandoned. Perhaps there were differences these instruments did not tap. The informal research yielded data that assured us that we must expand the concept of achievement.[12] Such an enlarged view was vital in terms of both test dimensions and classroom practices. The usual classroom still employed textbooks as core material, recitation as central process, and achievement tests as criterion. It was our belief that all students needed to be taught within a larger framework -- an essentially different view of what learning and education is -- and that particular attention should be paid to the special needs of the slow and superior. Class discussion, which will be reported in the next section, was chosen as a setting that facilitated the learning and interaction of the students. It was selected as a process where student learning could be studied somewhat objectively.

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[12] See Elizabeth Monroe Drews, "Achievement: Many Factors Influence Achievement and Its Assessment," Educational Leadership, Vol. 20, No. 1, October 1962, pp. 11-15, 55, for an elaboration of this point.

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CHAPTER 7

CLASS DISCUSSION

Introduction

An important aspect of academic development which was considered in this study was that of communication behavior. English classes have as their primary concern the use and interpretation of language. However, a review of school practices reveals that there is often much more emphasis in the classroom on teaching reading and writing skills than on studying and improving verbal patterns in spoken language. When class is in session, typical activities are primarily of an oral nature, yet these are often reduced to the lower level cognitive processes.[1] Discussion, which we consider in this study to be a higher level cognitive process -- if it is appropriately handled -- is rare in many English classes. Since there has been little objective study of or formal research on the kind of verbal interplay that we call discussion, we will be mainly on new ground.

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[1] Recitation, in this study, is held to be a lower level cognitive process in that it mainly calls for responses both of a factual and a pre-determined nature. Discussion which may involve both divergent and evaluative thinking is held to be higher level.

With discussion considered as an important part of teaching procedure, it was the decision at the outset to include information from these oral exchanges (usually thirty to forty minutes in length) as a part of the study. Although there had been an emphasis on discussion in all three of our earlier studies, we had not begun making tape recordings of class sessions or using trained observers in the classroom until the third study was underway. In the current or fourth study, although we previously had developed some ideas about how to study discussions, our approach had not been completely worked out, thus the present research and its attempt to describe and understand discussions is still essentially exploratory. We were interested in knowing more about the process, who participated, in what terms, and how much. Further, we wanted to collect this information for both homogeneous and heterogeneous groupings in order that we might better understand how these groupings stimulated verbal contributions among superior, average, and slow students.

Teams of three observers[2] visited each of the twenty-two experimental classrooms three times toward the end of the experimental year. Teachers were told ahead of time that the observers were coming and two of the three observed class discussions were taped. In every case teachers and students completed evaluation sheets on the discussions. Teacher evaluations of quality of participation by individual students in these sessions will be discussed under "Teacher Ratings" (See Part III, Chapter 8). Teachers also helped make the decision as to the kinds of discussions to be observed. These included one regular lesson, one topic of high interest value chosen by the teacher to elicit maximum discussion, and one specially prepared discussion on the topic of juvenile delinquency.[3]

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[2] Observers were graduate and honors students at Michigan State University who spent the term prior to the experiment studying approaches. They kept a record of classroom climate and attempted to categorize oral contributions. Neither the study of classroom climate nor of quality of contributions have been completed due to lack of funds. They also kept a record of order of teacher and student speech so that typescripts made from tape recordings could include the names of student contributors.

Although we had hoped to study levels and styles of thought process, and particularly to study critical thinking, by analysis of verbal interchange it became apparent that this was impossible within a limited time frame and on a small budget. Nevertheless, other kinds of analysis were possible. All of us, including the observers and those studying the typescripts were aware that there were marked differences in amount of participation by slow and superior students in heterogeneous and homogeneous classes as well as noticeable variations in spoken language patterns. Variations in oral communication seemed to differentiate the speech of slow, average, and superior students from one another in the two experimental contexts, homogeneous and heterogeneous. It appeared that a study of oral participation (who recited and in what terms) would give additional insights into the effects of grouping.

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[3] This topic was chosen after much discussion as an area that would hold interest for all students -- slow, average, and superior.

Selected typescripts, eight in all, from the session on juvenile delinquency, which all classes discussed, were used for this investigation. The samples were balanced -- two from each kind of homogeneous class and two from the heterogeneous classes. The eight tapes were also selected to include a balanced range of schools and teachers. Since we lacked models for oral study, we returned to earlier research we had done on readability. In such studies, difficulty of words and length of sentence were major considerations in determining difficulty level of written passages and it seemed appropriate to use a similar approach in determining the difficulty level of oral speech.

Because we felt that the classroom discussion was a flexible learning situation, i.e., there was no fixed format, we hypothesized that it would allow differentiated participation and instruction. We were interested in teacher-student interactions in various grouping situations, and expected -- judging from our previous study -- that superior and slow students would react in markedly different ways, in terms of verbal participation, to the homogeneous and heterogeneous groups. With respect to average students we had speculated that there might be a slight difference in participation between those average students placed in heterogeneous and those assigned to homogeneous sections. In our prior investigations we had not studied the oral communication and leadership patterns of the teacher. Thus we had a further question: did she vary her language style and amount of participation in keeping with the predominate needs of the students in the classroom? The final dimension of communication behavior with which we were concerned was that of both the degree and the universality of class involvement -- how many talked and how much -- in relation to group structure.

Results

Analysis

The data obtained from the typescripts of classroom discussions were analyzed in a number of ways. Student contributions[4] in homogeneous superior, average, and slow and heterogeneous classes were examined for the number of words at and above the level of the fourth grade, for the number of words per sentence, and for the number of words per contribution. In addition, for heterogeneous classes there was further analysis of the contributions of superior, average and slow students for the number of words at and above the level of fourth grade, for the number of words per contribution, and for the number of words per contributing student (during recorded class sessions). Contributions of teachers in all classes were examined for the mumber of words at and above the level of fourth grade, for the number of contributions per total class contributions, and for the number of words per total class words.

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[4] A contribution was defined as an uninterrupted verbal communication by one student or teacher.

High level words were designated as words at and above the fourth grade level as described by Dale and Chall (See Appendix C, p. vi). A sentence was defined as a complete thought, since the spoken language tends to include a series of sentences strung together by conjunctions. However, some difficulty was experienced with this criterion, so the information was used for the first typescript analysis only (Table 12).

Contributions per Class

Tables 11 and 12 report the results of the enumeration of contributions by superior and by slow students in homogeneous and heterogeneous classes. In the homogeneous classroom the superior students talked an average of 3.44 times and the slow talked an average of 4.03 times per class discussion. The data for heterogeneous classes reveal the wide discrepancy between participation of superior and slow students in heterogeneous classes. The superior students recited an average of 7.77 times per class whereas the slow made but an average of .86 contributions.

Script Analysis

Table 12 shows that the per cent of high level words in homogeneous classes varied directly with the ability of the students. Superior students used twice as many high level words as slow students (6.5% to 3.3%). Since the verbal contributions in the heterogeneous classes were disproportionately made by superior students (Table 11), it is not surprising that the general level of vocabulary in

TABLE 11

MEAN NUMBER OF CONTRIBUTIONS MADE BY SUPERIOR AND SLOW GROUPS IN HOMOGENEOUS AND HETEROGENEOUS CLASSES*

	Superior	Slow
Homogeneous		
Average Number of Contributions Per Class	3.44	4.03
Number of Students	94	63
Heterogeneous		
Average Number of Contributions Per Class	7.77	.86
Number of Students	43	36

*The homogeneous data were adjusted for variations in class size by multiplying the average number of contributions per class of slow students by the ratio of the average number of students in a slow class to the average number of students in a superior class.

TABLE 12

SCRIPT ANALYSIS FOR STUDENT PARTICIPATION IN HETEROGENEOUS CLASSES AND BY ACHIEVEMENT GROUP IN HOMOGENEOUS CLASSES*

	Homogeneous			Heterogeneous
	Superior	Average	Slow	
Percent of words				
Fourth grade and above	6.5	4.6	3.3	5.3
Average number of words				
Per sentence	21.0	17.9	15.9	20.1
Per single contribution	83.2	43.9	37.4	60.4
Number of students present for discussion	50	51	36	48

*Two classes for both heterogeneous and homogeneous.

heterogeneous classes (although comprised primarily of average students) was above that of the average homogeneous classes although slightly below that of the superior homogeneous classes.

In homogeneous classes, superior students used a larger number of words per sentence as well as more words per contribution than did average or slow students. In heterogeneous classes, the average number of words per sentence and per contribution was high, again reflecting the domination of the superior students in the class discussion.

It appears from the data on the three groups in heterogeneous classes (Table 13) that the level of vocabulary used by each group -- slow, average, and superior -- is similar to that found in comparable groups in the homogeneous classes. While the total number of superior and slow students is small, the per cent of high level words (4.5) for the participating average students in the heterogeneous classes was almost identical to their per cent (4.6) in a homogeneous class. The very active presence of superior students does not appear to have changed the spoken language of the average student who participated here.

A comparison of the data for average number of contributions and the average number of words per contribution (Tables 11, 12, and 13) does show some differences between homogeneous and heterogeneous participation. The superior students used more words per contribution in homogeneous classes than in heterogeneous classes (although they spoke less often in the homogeneous class than in the heterogeneous class). Conversely, average students in heterogeneous

TABLE 13

DETAILED SCRIPT ANALYSIS FOR STUDENT PARTICIPATION BY ACHIEVEMENT GROUP IN HETEROGENEOUS CLASSES

	Heterogeneous Classes		
	Superior	Average	Slow
Percent of words fourth grade and above.	6.9	4.5	3.6
Average number of words per contributing student.	273.7	167.4	28.0
per single contribution .	68.4	55.9	14.0
Number of students contributing.	7	19	1
present for discussion. .	9	34	5

classes used more words per contribution than did those in homogeneous classes. Slow students used far more words per contribution (37.4 in homogeneous as opposed to 14.0 in heterogeneous) and spoke more often in homogeneous than in heterogeneous.

The script analysis of the teachers' oral participation (Table 14) in these eight classes is perhaps the most interesting phase of this analysis. Although the teachers always spoke at a level which was somewhat above that of the student group, they varied their speech -- using more high level words for the superior classes and fewer for the slow. It was noted previously that the students, unlike the teachers, did not seem to be flexible in their word usage -- in a heterogeneous class where the dominant speech style was relatively high level, the average and slow student used a speech pattern very similar to the style of a comparable student in a homogeneous class and the superior student did not modify his choice of words so as to make his speech more intelligible to less able students.

The data on percentage of teacher contributions, showing the leadership role of the teacher in these classes, further reveals the flexibility of these teachers. The teachers of the homogeneous superior classes rarely participated (5.4%) whereas in the homogeneous slow and average classes they assumed a much more active role, speaking over one-third of the time.[6] In the heterogeneous classes

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[6] It is noteworthy that in one slow class the teacher had assigned student leadership; but, unlike the leaders of discussion in the superior groups, this leader was apparently not equal to his task and needed teacher assistance.

TABLE 14

SCRIPT ANALYSIS FOR TEACHER PARTICIPATION IN HETEROGENEOUS CLASSES AND IN SUPERIOR, AVERAGE, AND SLOW HOMOGENEOUS CLASSES

	Homogeneous			Heterogeneous
	Superior	Average	Slow	
Percent words fourth grade and above	15.0	10.9	7.6	12.6
Percent teacher contributions per total class contributions*.	5.4	38.4	39.4	22.5
Percent teacher words per total class words . . .	1.6	26.4	25.4	10.9
Number of Teachers	2	2	2	2

*Not including recognition of students by simple name calling.

the teacher participated less often than in average and slow homogeneous classes, but more often than in superior homogeneous groups.

Summary

The initial qualitative approach to the assessment of critical thinking in English class discussions yielded results that were unreliable and failed to distinguish among groups. A new approach was then taken and the discussion process, who participated, in what terms, and how much was studied. This information was collected in terms of both homogeneous and heterogeneous groupings.

When quantitative measures were employed it was found that superior, average, and slow students in homogeneous classes and heterogeneous classes differed in level of vocabulary and patterns of participation. In heterogeneous classes superior students were by far the most active participants; a larger percentage of them spoke, and they recited longer. Average students participated somewhat, however few slow students in heterogeneous classes spoke, and then but briefly. The level of words used in heterogeneous classes was high, reflecting the dominance of the superior students. Information from homogeneous classes shows that slow students do participate in discussions when grouped together although the level of words used is lower and their contributions are shorter than those of the superior and average homogeneous classes. Average students participated more frequently in homogeneous classes than in heterogeneous classes, and although homogeneous superior students did not participate as often, their contributions were longer.

Teachers also varied their verbal participation with the classes they taught. They were flexible in speech and leadership patterns when teaching different homogeneous classes, using more difficult words with superior students than with the slow and rarely participating in homogeneous superior classes while giving frequent support and leadership in slow classes. Teachers participated more often in average classes than in either heterogeneous or homogeneous superior classes, and the word level used was only slightly above that of average students. Teachers' verbal and leadership patterns in heterogeneous classes was similar to those of the superior homogeneous classes, perhaps reflecting their response to the domination of the superior students.

Discussion and Implications

Class discussion, as was mentioned earlier, was chosen as a vehicle for developing understanding of student achievement because it offered many possibilities of studying various aspects of student learning. Not only did it help us study the learning process, offering data of quite a different nature than that provided by achievement tests, but the discussions apparently resulted in more active involvement of students in learning. With appropriate student grouping and an accepting teacher, discussion sessions supplied an atmosphere that fostered student participation and interaction in the learning process.

Putting an idea into one's own words and stating it clearly so that one's classmates can understand it demands much more involvement and a different kind of cognitive process than the usual classroom situation. We are assuming here that memorizing textbook answers to use in "teacher ask, pupil tell" recitations or to insert in the blank spaces in the workbook or the test folder is usual. Not only is there more interest and involvement and a different process but there may be better learning. There is considerable research evidence to indicate that most people remember what they have said better than what others have said. From this information we have made the assumption that there is more learning, at least the kind with which this study is concerned, in free-discussion than in text-recitation class sessions and thus we structured all of our classes in this direction -- homogeneous and heterogeneous alike. In free discussions students could participate at will. However, in the heterogeneous classes the slow rarely volunteered and many average did not. Thus it was our assumption that since a larger percentage of students participate in homogeneous classes, there would be, to that extent, a somewhat greater retention of the disseminated information.

Such a process not only meant a high degree of student involvement but, as was indicated above, allowed us to study achievement as a process and in terms other than the learning of facts. Contributions were voluntary and, more important, were created by the student himself as he sorted through, organized, and refashioned ideas from a mass of mental data.[7] Presumably he had judged his contributions to be relevant and thus we may assume that such contributions are far more revealing of the student thought process than structured replies given to structured questions. Not only did we obtain glimpses of the student's mind in action -- which gave us certain clues as to whether he tended to parrot, to query, or to make imaginative extensions -- but we also became aware that most students were learning and contributing far more content, and often of a quite different nature, than was prescribed by curriculum or presented in textbooks. Thus along with the fostering of discussion and of inquiry was always the effort to impart subject matter. Textbooks as well as other materials were covered, but the drill was less onerous and attempts were made to relate learning to life. We did not, however, throw the books away or wait for a natural unfolding. Even in the units on juvenile delinquency there was extensive outside preparation. In the best discussions the student approached autonomy, using the text only as a resource in contrast to recitations where students' answers were an extension of the text.

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[7] Bruner, op. cit., Part II, "The Quest for Clarity," elaborates on this idea.

The study of discussion led us to a consideration of the nature of the group structure and the communication process, and the interrelation of the two. Studies of communication and classroom interaction render considerable evidence that the most successful and meaningful verbal transactions stem from common experience and are facilitated when individuals have similar levels and styles of expression.[8] Our present as well as past observations of group discussion in heterogeneous classrooms indicate that the backgrounds and abilities of a randomly selected ninth grade group are too diverse to allow or encourage significant participation of all members of the group.

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[8] Lindesmith and Strauss, Social Psychology (New York: Henry Holt and Company, Inc., 1956), p. 49, pp. 236-238.

Slow students are particularly handicapped in heterogeneous classrooms. Our information on the family background[9] of slow students, as well as achievement and observation records, shows that they have language and other experience patterns that differ vastly from those of their more able contemporaries. As a result they usually cannot participate in terms of the norms of the heterogeneous classroom. Our data indicate that these norms, particularly as they relate to style of participation, are rarely framed in the language of the slow child but more nearly approach the speech patterns and, probably, the thinking style of the superior student. There appears to be a definite hierarchical structure in the heterogeneous classroom at the top of which resides the superior student who dominates and sets the style for discussion. The slow are "low men" in this hierarchy, they do not participate, and they excuse themselves by saying that some class members "talk smart" and add, "I don't talk because I can't talk smart."[10] Evidence[11] indicates that the non-participating slow students rarely seem to listen to, understand, or remember the ensuing discussions.

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[9] Studies indicate that lower class families (70% of our slow students are lower class) seem to have few conversations in the home.

[10] These responses were derived from interviews with the slow students.

[11] All students were asked to evaluate the day's discussion and to indicate what they disagreed with, agreed with, etc. An

If the heterogeneous classroom structure does not facilitate the involvement of slow students and also of a number of the average students, then we feel that a change of structure resulting from a new grouping of students is in order. For a number of reasons we were led to hypothesize that homogeneous grouping would provide a better framework for discussion than the heterogeneous class. Specifically, such grouping would limit the extremes of diversity in a heterogeneous class and still provide enough range of difference for challenge and variety. This would then give us a situation in which we could provide (within limits) experiences and a language level that would be appropriate and understandable for all.

The slow student, with his need for recognition and success, would find an audience that would not only listen but respond as well when he ventured opinions and ideas. The teacher could also take "time out" to talk to him in his own terms and encourage him to expand his ideas rather than to disregard or only perfunctorily acknowledge his contributions. The able student, growth motivated, could come to grips with much that was difficult and demanding, and flourish in his encounters. Within the ground rules of the class he could thus be controversial without damaging feelings and, above all, engage in the free play of ideas. In such situations neither

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analysis of these evaluation sheets for slow heterogeneous students showed that they had little grasp of what was transpiring in the classroom.

the student nor the teacher would feel the need to constrain and curb because ideas were "over the heads" or "beyond the interest range" of the majority of the class.

When school people discuss the pros and cons of homogeneous grouping they often express certain fears. Teachers feel that teaching may lose its zest with no leaders emerging and bland discussions ensuing. Teachers also fear that discipline problems may develop, especially in a slow group. On the one hand, the fear is that the slow have lost the ability to communicate due to years of inactivity with the result that discussions will die on the vine and, on the other hand, they are afraid that the group, feeling safe and in congenial company, will suddenly become outspoken and unruly. These fears, however, did not prove to be well founded.

Our results and observations have supported the hypotheses developed, hypotheses that were in the main based on our previous findings and the aims of education as we understand them. Our main finding was that when the frames of reference or grouping situations were different, comparable students responded in quite dissimilar ways. Ancillary to this was the finding that in all homogeneous groups -- superior, average, and slow -- there was more interest in participation at any given time and there were more students who took part than there were in comparable heterogeneous situations. In homogeneous classes 90 per cent of the students were frequent participants as compared to half or less of the students in the heterogeneous classes who typically took part in discussion. The other patterns were different, corresponding to the varying backgrounds and abilities of the groups.

Slow, average, and superior students all tended to talk in their own vocabulary terms and used sentence formations with which they were comfortable whether they were in homogeneous or heterogeneous classes. As a result, the heterogeneous class discussion was a mixture of language patterns. However, since the superior did most of the talking, their speech forms dominated. The homogeneous classes (slow, average, and superior) tended to produce more consistent patterns of speaking style with levels that were clearly distinguishable one from the other. While the slow spoke in simple terms, at concrete-personal levels and were bound by immediate realities, the superior used relatively difficult words and their expressed concepts were essentially abstract. As would be expected, the speaking patterns of the average homogeneous class fell in between these two.

Although our tables are in terms of normative participation, there were patterns of talkers (participators) and abstainers (nonparticipators) in each group. In other words, in each group whether homogeneous or heterogeneous, whether slow, average, or superior, there were individuals who emerged to give color and emphasis to the discussions. Although a participation curve existed in all classes there were differences between homogeneous and heterogeneous classes, particularly a more equalized distribution of talking in the homogeneous class. Finally it must be remembered that the leaders in the slow and probably, to an extent, in the average groups would have been infrequent participators or silent in heterogeneous classes.

Since the discussions in heterogeneous classes were dominated by the superior student and the vocabulary level and speech patterns of these classes approximated those of the homogeneous superior, it would seem that able students would gain little from homogeneous placement. It is true that superior students could talk less often in a room filled with would-be participators, however their eagerness to speak did not diminish. In interviews and on questionnaires (See Part III, Chapter 11 and Appendix C , p. ix) they contended that they preferred the homogeneous class -- that there were more opportunities to go beyond the text for facts and to "reach out for new and important issues." They felt they made "more progress in less time" and that discussions were "never dull." Particularly they liked the fact that "class was not dominated by a few students."

Because the teacher is the most influential individual of the classroom group in framing the atmosphere for a discussion and because a successful classroom discussion depends as much on appropriate leadership as on group structure, the role of the teacher as discussion leader is most important. Unfortunately, classroom discussions are not conventional teaching procedure at any level of education in this country, and all too few teachers have participated in them. Since it would be difficult to lead a discussion if one had never been in one, it was decided to have in-service meetings in which teachers could discuss their classes and teaching approaches. Thus, no special training was given to the teachers except for the fact that they themselves had participated in a series of free discussions (in-service meetings) and had read and considered the implications of philosophies such as those presented by Rogers and Maslow for the teaching situation. The teachers enjoyed the freedom to talk constructively of their work and, in some cases, they enjoyed the discovery of how they felt about the work and themselves.

Although there were no directives to the effect that teachers should vary their communication patterns in keeping with the verbal skills of their students, there was much discussion as to how particular students learned best and as to what seemed to be most motivating. Topics that might be discussed, ways of getting a variety of activities into a class period, the appropriateness and appeal of selections to read and the needs of particular children were all considered in these teacher discussions. It is quite possible that these teachers behaved with appropriate variety before the grouping experiment began; it is also possible that their growing awareness of students' needs and their increasing familiarity with the discussion process itself enhanced their flexibility.

For whatever reason, it is noteworthy that the teachers talked in remarkably suitable ways, especially in addressing homogeneous groups. Their sensitivity and sense of the appropriate was apparent in the variety of their patterns of oral communication in response to the needs (growth or deficiency) of the group with which they were working. While they spoke in more advanced terms to the superior, assuming only minimal leadership,[12] they talked in a modified fashion to the slow and average, giving them much more leadership, guidance, and stimulation than had been offered the superior students. And, although they spoke in terms adapted to each group, they did not underestimate the group -- they always used a few more difficult words and made their sentences a little longer than those of their target population.

We can infer from the general views we hold with respect to the needs of human beings to express and be themselves that this act of the teachers of standing aside and encouraging the students to participate[13] will serve as a non-verbal communication to the students. By the very acts of listening and trying to communicate in terms that her students will understand, the teacher demonstrates that she values them and their ideas. In Maslow's terms, people must realize ". . . that every man who is kind, helpful, decent, psychologically democratic, affectionate, and warm, is a psychotherapeutic force even though a small one."[14] It is possible that in listening as well as in talking our teachers became such forces.

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[12] It has been estimated that teachers do 65 per cent of the talking in an average class session.

[13] Although the teacher participates more in the homogeneous slow classes than in the heterogeneous classes, her leadership is in terms that the students can understand and is offered only that they might be more active participants.

[14] Abraham Maslow, Motivation and Personality (New York: Harper & Brothers, 1954), p. 321.

As well as showing respect for the ideas and concerns of these adolescents through permitting an open examination of crucial issues, we also aimed for and sometimes succeeded in fostering critical examination and tentative conclusions. In the discussions of homogeneous superior classes where students autonomously interposed ideas and shaped the course of the discussion there was a particular emphasis on the application of the principles of critical thinking to the issues being discussed. We agree with Carpenter ". . . that there can be neither intellectual integrity nor freedom unless we insist upon critical thinking about our attitudes towards the discoveries of our time, and unless we know how to re-examine our own lives in the light of the values to which we give priority."[15]

In summary, it was apparent from our studies that class discussions resulted in increased productivity and involvement for almost all students in the homogeneous situation. Ability grouping also allowed for differentiated approaches. With the slow learners, the important element appeared to be the fact that they participated, and in an amount comparable to that of any other group. Average students also participated somewhat more in homogeneous groups than they did in the heterogeneous situation. Superior students were free to discuss abstractions and had the stimulus of their superior peers. Voluntary participation, freedom to speak in and acceptance of their own language and thought patterns, and freedom to be the kinds of adolescents they are seems more possible for all students in the homogeneous groups. With a minimum of training, teachers seem to have the ability to give the necessary structure to this interchange. Thus, here is a place (if the school can ever adequately supply this) where adolescents can reveal themselves, even to the extent of disclosing their idealism and basic concerns.

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[15] Marjorie Carpenter, "Preface," The Larger Learning (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1960), p. xv.

Much research is needed in this area. We feel that understanding comes from discovery and from putting learning into one's own terms. However, imaginative and carefully planned investigations will be necessary before we have objective evidence on this point. Further, we must ask at which point do ability and background characteristics diverge so sharply that communication barriers emerge. Our data leads us to the inference made by sociologists of social stratification that a relatively small range of differences makes for a more cohesive and productive group. For example, Gans states ". . . positive effects are more likely to be achieved under conditions of moderate population heterogeneity. Extreme heterogeneity is likely to inhibit communication and to encourage mutual resentment, whereas moderate heterogeneity provides enough compatibility of interests and skills to enable communication -- and therefore learning -- to take place."[16] This appears to be a most fruitful area for research, for if we are accomplishing by means of discussion the kind of achievement that might be called intellectual development, then, as Jersild points out, while participating in this learning process the adolescent may increase his capacity to relate school to life. Jersild continues, "If permitted and encouraged to voice his own plans, thoughts, and feelings, the young person will show an interest in understanding himself, in improving himself, and in understanding others."[17]

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[16] Herbert J. Gans, "The Balanced Community: Homogeneity or Heterogeneity in Residential Areas?" Current, No. 19, November 1959, pp. 34-35.

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[17] Arthur T. Jersild, The Psychology of Adolescence (New York: The MacMillan Company, 1957), p. 81.

CHAPTER 8

TEACHER RATINGS

Introduction

The extent of flexibility of teacher verbal behavior in terms of varying student needs was not known until the communication patterns of the experimental teachers, as they dealt with the several types of classes, were analyzed. Similarly the influence of class groupings upon teachers' ratings and judgments of a given kind of student (superior, average or slow) had not been studied by the researcher prior to the present experiment. It was apparent that homogeneous class groupings provided the teacher with a different setting or frame of reference within which to perceive students. Yet questions that we might ask about this phenomena had not been answered before we did this exploratory study. For example, do teachers see the slow student as being an adolescent of quite different competencies when he is in a homogeneous setting (all slow students) than when he is in a heterogeneous grouping?

At three times during the spring of the experimental year teachers were asked to rate students. Marks in English were given on class assignments and listed at six week and semester grading intervals. Final grade point averages were compiled for all students after they had completed a year's work in English.

During the second semester of the experimental study teachers rated (See Appendix B , p. xi) students individually after each of the three observed class sessions. Two ratings were given but only one, "Evaluation of Today's Performance," was analyzed. Ratings were from 1 (below average) to 3 (above average).

At the close of the school year teachers not only awarded final marks in the English course but rated each student as he appeared in terms of the entire ninth grade population as she knew it. Ratings (See Appendix B , p. xv) were mainly in terms of intellectual qualities although one general social rating was made. The intellectual dimensions upon which the teachers rated the students were questioning attitude, open-mindedness, creativeness, use of research evidence (other than text), quantity of participation, and quality of participation. The seventh rating was made in the area called social acceptability. Ratings were from 1 (poor) to 5 (outstanding).

The major question this study asked was whether teachers would rate students of a given ability differently (in terms of the above qualities) when they taught them in homogeneous classes than they would rate students of comparable ability whom they taught in heterogeneous classes. On the basis of reading done in the areas of perception and the psychology of interpersonal relationships, we hypothesized that a teacher's perception of the intellectual capabilities and social acceptability of a student might well depend upon the norms of the group in which he is being perceived. We felt that this might be particularly true in the case of the slow student and predicted that he would receive more favorable ratings when performing in a context where the norms were commensurate to his ability.

Results

Analysis

Teacher ratings were given for superior, average, and slow students -- some of whom had been scheduled in homogeneous classes and others who had been scheduled in heterogeneous classes. Means for superior, average, and slow students in homogeneous and heterogeneous classes were computed from the composite scores of teachers' ratings for three observed sessions. The first six (questioning attitude, open-mindedness, creativeness, use of research evidence, quantity of participation, and quality of participation) were combined into a composite intellectual rating. The mean for the seventh rating, social acceptability, is given separately. From final marks given in English at the end of the year, a mean grade in English was found for each group, i.e., superior, average, and slow boys and girls in homogeneous and heterogeneous classes.

"Evaluation of Today's Performance"

Table 15 reports the results of the analysis of teacher ratings of each student "regarding his part in the discussion" following each of the three observed class sessions. In homogeneous classes the

TABLE 15

MEANS OF TEACHERS' "EVALUATION OF TODAY'S PERFORMANCE" FOR THREE OBSERVED CLASS SESSIONS BY ACHIEVEMENT GROUP AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES*

	Superior		Average		Slow	
	N	Mean	N	Mean	N	Mean
Homogeneous						
Boys	26	6.0	62	5.9	43	5.8
Girls	58	6.7	65	5.4	22	5.8
Totals	84	6.4	127	5.6	65	5.8
Heterogeneous						
Boys	14	6.6	65	5.5	13	4.3
Girls	12	7.4	70	5.4	7	4.6
Totals	26	7.0	135	5.4	20	4.4

*Summation of the three point scale for the three class sessions provides a total scale of three to nine.

means for superior, average, and slow boys were similar, 6.0, 5.9, and 5.8 respectively. There was a greater difference among superior, average, and slow girls, (6.7, 5.4, and 5.8 respectively) accentuated by the higher ratings given superior girls. Superior girls in homogeneous classes were rated by their teachers 0.7 above superior boys while average girls were rated 0.5 below average boys. Slow girls and boys received equivalent ratings. The mean of slow boys in homogeneous classes (5.8) was almost the same as that of average boys in homogeneous classes (5.9) while slow girls in homogeneous classes were rated 0.4 above average girls in homogeneous classes with the result that total mean ratings in the slow homogeneous classes were higher than the total means for the average students in homogeneous classes. Thus the progression of rating for students in homogeneous classes was not in the expected order of slow, average, and superior but instead the average students were rated lowest (5.6) with slow rated slightly higher (5.8) and superior as most able (6.4).

In the heterogeneous classes, students were rated in the expected progression with superior highest. The average means for superior, average, and slow students were 7.0, 5.4, and 4.4 respectively. Again there was a greater difference among girls, resulting from the very high rating (7.4) given to superior girls. This was a rating 0.8 higher than for superior boys (6.6) and 2.0 higher than for average girls (5.4) in the heterogeneous classes. The mean rating of 4.4 (on the total of three discussions) for slow students is not far above the lowest possible mean rating (3.0).

A comparison of homogeneous and heterogeneous means shows that superior students were rated somewhat lower (0.6) in homogeneous classes than in heterogeneous classes. Average students were rated about the same, while slow students were rated considerably higher (1.4) in homogeneous than in heterogeneous classes. It should also be noted that the mean rating for slow students in homogeneous classes is higher than the rating of average students in either homogeneous or heterogeneous classes.

Intellectual and Social Ratings

Table 16 reports the means for the composite final intellectual ratings (6 areas) and the social rating made by the teachers (See Appendix A, p.v for full Table). In homogeneous classes, superior students rated about one point above average students on both intellectual and social ratings. Slow students in homogeneous classes were rated almost as high as the average students in both areas. In heterogeneous classes the differences between superior and average, and between average and slow students were approximately one point on the social rating and slightly over one point on the intellectual scale.

A comparison of homogeneous and heterogeneous means shows that superior students were rated only slightly lower in homogeneous classes than they were in heterogeneous classes. Average students received the same means in both situations. Slow students in homogeneous classes in contrast to those in heterogeneous classes were rated higher by their teachers on both the composite

TABLE 16

MEANS FOR INTELLECTUAL AND SOCIAL RATINGS MADE BY TEACHERS FOR ACHIEVEMENT GROUPS IN HOMOGENEOUS AND HETEROGENEOUS CLASSES*

	Superior		Average		Slow	
	N	Mean	N	Mean	N	Mean
Intellectual Ratings (Six questions)						
Homogeneous	78	4.1	112	3.0	59	2.7
Heterogeneous	23	4.2	132	3.0	21	1.7
Social Ratings (One question)						
Homogeneous	78	4.1	112	3.1	59	2.9
Heterogeneous	23	4.2	132	3.1	21	2.1

*Intellectual and social ratings were made on a five point scale.

intellectual rating (1.0 higher) and on the social question (0.8 higher).

School Marks in English

Table 17 reports marks in English, in terms of grade point average[1] for students during the experimental year. Superior students in homogeneous classes had a mean grade of 3.32 (or B+), while superior students in heterogeneous classes had a slightly higher mean grade of 3.52. Average students in both homogeneous and heterogeneous classes had identical mean grades -- 2.21 (or C). However, there were striking differences in the marks received between the slow students in homogeneous classes and the slow students in heterogeneous classes. The slow students in homogeneous classes received a mean grade of 2.48 (or C+), whereas slow students in heterogeneous classes had a mean grade of 1.11 (or D).

While the difference in grades of superior students is small in this study, there is a possibility that in the context of the homogeneous superior class, the teacher may grade these students lower than in the heterogeneous class, thus penalizing them in terms of school honors and academic records for college admission and scholarships. It should be pointed out that this happened in only one of the four superior homogeneous classes but that this only slightly lowered the mean grade point average over all classes.

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[1] A = 4.0, B = 3.0, C = 2.0, D = 1.0

TABLE 17

MEANS FOR SCHOOL MARKS IN ENGLISH BY ACHIEVEMENT GROUPS AND SEX IN HOMOGENEOUS AND HETEROGENEOUS CLASSES FOR THE NINTH GRADE*

	Superior		Average		Slow	
	N	Mean	N	Mean	N	Mean
Homogeneous						
Boys	24	2.90	47	2.01	39	2.61
Girls	55	3.51	53	2.39	20	2.22
Totals	79	3.32	100	2.21	59	2.48
Heterogeneous						
Boys	12	3.25	59	1.97	14	1.04
Girls	11	3.82	59	2.46	9	1.22
Totals	23	3.52	118	2.21	23	1.11

*A = 4.0, B = 3.0, C = 2.0, D = 1.0

Slow students in heterogeneous classes received grades close to or in the failure zone. Slow students in homogeneous classes, rewarded on the basis of effort and interest and of achievement in terms of working at their own level, rather than in terms of competitive achievement on ninth grade material were able to receive a mean grade of C+, indicating some degree of success. This provided slow students with a sign or symbol of accomplishment (in a class they recognized to be "adjusted" to their level). Since these grades are recorded as "adjusted" grades in the school record, their position in relation to average students is not distorted in the administrative file. It should be recalled that many of these slow students were of at least average intelligence, but handicapped by failure to develop skills, especially reading skills.

Summary

Three ratings made by teachers were considered: general evaluation of performance in the three observed class sessions, six (combined scores) intellectual and one social rating for performance during the whole year, and marks in the experimental English course.

All three ratings showed that in the heterogeneous class superior, average, and slow students formed readily distinguishable groups. In all cases ratings showed that superior and average students were viewed as markedly different from slow students in a heterogeneous class structure. In heterogeneous classes, slow students received ratings at the bottom of every scale, in both intellectual and social areas.

The ratings for students in homogeneous classes revealed that superior students continued to hold the top position but the distinction between average and slow students virtually disappeared. It should be noted that the year-end rating, which directed teachers to rate the students in relation to adolescents at large, showed slow students receiving much higher ratings in the homogeneous than in the heterogeneous classes.

Discussion and Implications

A careful survey of studies concerned with group processes in the classroom reveals, as Smith[2] indicated, that the learning of any individual is influenced not only by the classroom activities and materials, the teacher's leadership, and the nature of the group, but also by the attitudes of the teacher and of other group members toward the particular student being considered. In this part of our study we are particularly concerned with the teachers' attitudes toward and perceptions of different kinds of students. We agree with many educators[3] who suggest that the attitudes of the teacher influence the learning of the student. In turn, the student, by his particular kinds of performance and his attitudes toward learning, tends to shape teacher attitudes.[4] The situation is circular and reciprocal, and we are concerned with describing it. As was mentioned earlier, we have committed ourselves to the goal of fostering learning in the classroom -- both in its intellectual and social-emotional dimensions. We have further accepted the premise that an environment providing psychological safety and acceptance is important in such learning.

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[2] Louis M. Smith, "Group Processes in Elementary and Secondary Schools," (What Research Ssys to the Teacher), NEA, Number 19, 1959.

[3] Marie M. Hughes and Associates, Development of the Means for the Assessment of the Quality of Teaching in Elementary Schools: A Research Study, (Salt Lake City: University of Utah Press, 1959).

The teacher perceives each student within a frame of reference -- the classroom structure -- and usually judges him accordingly. We have noted from our previous studies and from related studies that in the heterogeneous or usual classroom situation, the teacher sees the students as a diverse group, ranging from the very able and culturally privileged to those with

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(3 cont.) Earl C. Kelley, Education for What is Real (New York: Harper and Brothers, 1947).

Herbert A. Thelen, "Classroom Grouping of Students," The School Review, LXVII (Spring, 1959), pp. 60-77.

[4] Others have commented on these phenomena, as Murphy indicates, "Kurt Lewin and Harry Stack Sullivan, among others, have taught us to realize that no individual makes an adaptation to a situation without in some sense causing the situation to adapt to him. . . this will lead -- as Robert Sears, among others, has shown -- to a science that will deal not simply with persons, but with interpersonal events; dyadic functions, he calls them, the actions which are expressions of the unique individualities and reciprocities of a given situation." Murphy, Gardner, "The Cultural Context of Guidance," The Personnel and Guidance Journal, Vol. 34, No. 1, September 1955, pp. 4-10.

limited academic skills and, often, equally limited home backgrounds. Our present study confirmed this. In her heterogeneous class, the teacher rated students as she saw them perform in relation to their classmates, with superior students given the accolade of excellence, average students seen as middle-of-the-roaders, and slow students ranked at the bottom. In contrast to this perceived diversity within a single heterogeneous classroom we note that the teacher did not, at least in her objective ratings, differentiate student levels so markedly between one homogeneous class and another. This is particularly true in the case of the teacher's ratings of her students in average homogeneous classes as in comparison with ratings she made of the students in slow homogeneous classes.

Results of their ratings confirmed our hypothesis that teachers are influenced by the group structure when they view an individual. They do not see the student as discrete, an entity separate from a background, but rather as a figure that is part of that background. In perceptual terms, the figure and the background mutually influence each other. Thus, in a heterogeneous group the slow student is rated low in qualities of intellectual functioning, both in the course of day-to-day class sessions and at the year's end. Comparable slow students in a homogeneous setting are viewed as being much more competent; in fact, practically "average."

This shift in view may occur for several reasons. Working with the slow student in a new universe where most students are like him, the teacher may never mentally transplant him into the less favorable, heterogeneous situation. If we take the phenomenological point of view, we could presume that she deals with him at face value, i.e., as he appears in the homogeneous context. In this context and at this point in time he performs relatively well, seems adequate and thus fares well in terms of the teacher's rating. Another possibility is that the teacher's perception is modified by observational rules. In such a situation the teacher might consciously plan to give the slow student the benefit of every doubt and to allow him to reap the benefits of a situation in which he is not "outclassed" in competition and paralyzed into inaction by books he cannot read. Much discussion among the teachers in the in-service meetings was centered around the matter of how slow learners might best be taught. Teachers shared promising ideas as to topics and materials that appealed to the slow. Moreover, there had been the decision made by the teachers and administrators that if a slow student performed adequately by the standards in the homogeneous class, he should receive a "C". Thus it would seem that both in conscious and unconscious ways, the homogeneous structure might give the student an advantage in the teacher's eyes.

The same teachers who worked with the slow had average students, both in homogeneous and heterogeneous classes, but their perceptions of and attitudes toward equivalent average students in the different contexts were markedly similar. There was no abrupt shift in attitude toward and rating of the average student in the heterogeneous as against the homogeneous situation, as was apparent with the slow. It seems quite possible that the two contexts (materials, language patterns, and even the group structure) were not sufficiently different for the average for them to respond dissimilarly or for the teacher to view them differently. The grade level text remained as the instructional core and, although all students within the homogeneous average classes were roughly within a four-year reading ability range, it must be remembered that most students in heterogeneous classes, despite the intellectual domination of the superior students, were still average.

Teacher ratings of superior students are still another matter. A concern that some educators and many parents have voiced is that a teacher who sees only superior students will begin to view them as average and mark them on a normal curve -- a practice that could wreak havoc with chances for college admission. This particular problem was discussed in the in-service meetings and teachers made an effort to give their homogeneously grouped superior students marks that were similar to those they would have received in a heterogeneous class. Nor did they rate them substantially lower in general ratings of performance, again perhaps because they consciously kept in mind that these were superior students. We cannot claim to fully understand the varying phenomena held in mind by the teachers in making ratings and giving marks, but it seems clear that the behavior of teachers can be appropriately flexible.

In this investigation we have made a particular effort to understand slow learners and how teachers might work with them effectively. As we consider shifts in perception by the teachers and reasons for these changes, it must be remembered that in the homogeneous classroom the teacher was able to focus her attention on the particular needs of the slow student. We have already noted that she supplied meaningful materials, communicated at a level of understanding, paced classroom activities appropriately, and reported that she truly enjoyed working with these students. Our observers also reported and the teachers[5] confirmed that the slow students who had been in homogeneous classes for several months became a different order of student than their counterparts in the heterogeneous situation. They read books and sometimes took a favorite one home; they attempted to write themes. But above all, they talked. As was mentioned previously, although the slow have communicative patterns of their own, these students are far less handicapped in speech than in reading or writing. Thus, when discussion was encouraged and the class structure was such that slow students dared to speak out, they were being judged on a dimension of comparative adequacy, and in this sense an average grade was not a travesty in terms of academic standards.

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[5] This information was not gathered as a part of the formal design but instead constituted data of an exploratory and impressionistic nature.

Capitalizing on his adequacies (giving him work he could do), supplying a haven where it was psychologically safe to do it (i.e., to read "baby books" and to laboriously fashion a three-sentence theme), and supplying recognition for his successes -- the teacher found the slow student doing relatively better and markedly more work. Although there is no formal summary of information on the relative productivity (beyond achievement test scores and participation in discussion) of slow students in homogeneous and heterogeneous classes, teachers were each interviewed individually and a content analysis of their open-ended discussions indicated that slow students in the homogeneous setting not only participated effectively in oral discussion but seemed to be more effective human beings in both the social-emotional and the intellectual realms. There were few discipline problems in the slow homogeneous classes and the teacher reported that most of these students were cooperative and interested. They read books both in class and out, and expended surprising effort in written work in spite of their ever-present skill handicaps. Thus the teacher did not need to resent these students as sitting patiently waiting for attention she had no time to give, or for speaking out in an inappropriate and "off-key" fashion when they felt driven by momentary inspiration or by the need for activity. Further, she had time to think about, study and understand them. As Gordon Allport has said, "It's hard to be down on someone you're up on."

In such a context the teachers' appraisals[6] that the slow were doing well in homogeneous classes were honest ones. They were truly teaching these previously reluctant learners and felt good about a task well done. The usually silent (and sometimes surly) slow students were responding to a new situation with eager participation. Communication lines had been opened between them and their teacher. All of this, as we have indicated, has implications for teacher ratings and perhaps gives us a clue as to why teachers gave slow students more favorable ratings in the homogeneous situation than in the heterogeneous.

These findings imply that a teacher can do much to create a healthy atmosphere and a superior learning climate in the classroom. Her leadership can provide encouragement and, helped by a cohesive and compatible group, her behavior can do much to involve all students in learning. This behavior evolves from her perceptions of and attitudes toward the students and, in turn, these perceptions and attitudes are influenced by group structure and group performance. Our findings seem to indicate that this more adequate communication (education) process can be achieved more readily for at least one group, the slow learners, in the homogeneous classroom. With group heterogeneity modified in this way, the normative language patterns used, the background knowledge required, the materials used,[7] and the goals pursued in class work can more nearly meet the needs of an entire class.

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[6] This material is inferential and derived largely from notes taken during in-service discussions.

[7] It must always be kept in mind that grouping only reduces the range in achievement level and that different levels of

The fact that the teacher wishes to share understanding will further enhance the learning process. Perhaps consciously, perhaps intuitively she learns to speak in an appropriate language. Always she listens and responds directly and not obliquely. Thus, concern for the student as a human being and a desire that he learn are intimately blended in the teacher's communications -- verbal and non-verbal. She not only removes fear and suspicion but provides cognitive satisfaction; she cares enough to see that each student has materials he can read and that each is given assignments which are meaningful and manageable, and she enriches and strengthens and gives directions to ideas that the student can grasp and, as we have seen in the case of slow students, silent and idle adolescents can become communicative and productive.

Teachers do not, however, always accomplish this kind of teaching without themselves having appropriate training and experience. True, there have always been teachers who by their very inventiveness and concern for children developed teaching procedures which created good group climates for individual learning. It is our feeling, however, that such important aspects of learning as the group structure and the teaching approaches should not be left to chance, that there are ways to help the teacher develop

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competency still remain. The teacher must continue to use a variety of materials but there will be more common ground in homogeneous classes. In homogeneous groups she is better able to adjust to the diversities since she is only "stretching across" five or six grade levels and not fourteen. (See Chapter 5).

attitudes toward learners that will facilitate learning. Teaching students the skill of reading rather than literary appreciation, teaching them how to write a sentence rather than how to develop suspense in a short story, and talking on a concrete-personal level rather than on an abstract-general level is not usual behavior for teachers trained to teach subject matter in the secondary school. Teachers cannot be expected to develop these skills needed to teach slow students without administrative provisions and help. Groups (and we speak particularly of the homogeneous grouping of the slow) can be structured with care and taught with skill so that individual needs can emerge and be recognized. Teachers can be helped to develop or find materials that are interesting and at the right level; they can -- by participating in group work themselves -- develop a deeper understanding of the needs of students, and discover new teaching approaches that will take into account these needs, particularly in terms of learning levels and styles.

In summary, we felt that teachers are of crucial importance in the classroom and that every effort should be made to acknowledge this importance. From this point of view it seems vital that teachers become an integral part of a study of classroom learning. Group meetings and planning seem to help teachers to make more adequate differentiations and to view students of all kinds in affirmative terms. It was found that with homogeneous groupings and appropriate curriculum adjustments teachers developed a more positive attitude, especially toward the slow student. And we hypothesize that the students in turn will benefit from the more positive feelings of the teachers toward both themselves and their charges. Out of such a situation and with teacher attitudes that are warm and accepting, the student will thrive and develop. For, as the class becomes a group in which concern is present for the growth of each member, feelings of rejection can be eliminated, feelings of inadequacy tempered, and more effective ways of seeing oneself and relating to others developed.

CHAPTER 9

PEER RATINGS

Introduction

Human beings, especially mature ones such as teachers, tend to change their behavior toward individuals and their perceptions of these individuals when situations (such as class groupings) change. For example, it has already been noted that slow students do not communicate orally very effectively in heterogeneous classes and that their teachers rate them as relatively lacking in ability and give them low grades. On the other hand, other equally slow students placed in homogeneous classes talk freely and are rated as average adolescents by their teachers, both on rating scales and in terms of school marks. The question arises as to whether teenagers' ratings of one another are also, to an extent, governed by the group structure. In an earlier study[1] we had worked with both homogeneous and heterogeneous groups and found that the probability that a given adolescent would be chosen by his peers on a sociometric measure was closely related to the make-up of the group in which he was placed. The way his classmates perceive this teenager would seem to vary with the assembly or "mix" of the group and where the particular individual appears to fall in the hierarchy. Our question is -- can we describe this matter of differing perceptions more precisely and completely?

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[1] Part I, Chapter 2, REVIEW OF RESEARCH, Section B, "Research Related to Development of Present Study", pp. 36-38, Study three, 1957-1958.

In an attempt to find an answer to this question, a series of six questions (See Appendix B, p. xix) designed to elicit twenty-one sociometric choices of both a social and an intellectual nature was included as part of a questionnaire filled out by each student at the end of the experimental year. Two of the six questions dealt with social choices, one of them in an informal picnic setting, the other in the more formal school dance situation. In the former case, three choices were requested, without designation of sex. On the dance question all students were directed to choose from both sexes, i.e., three boys and three girls. The four intellectual questions were framed to produce three choices in each of the following areas: general excellence, originality, open-mindedness, and critical thinking. It should be emphasized that students were instructed to make choices of classmates only from within their English class.

Obviously when sociometric choices are within the universe of a given classroom the setting is structured. However, given two classrooms -- a heterogeneous and a homogeneous -- and forced choice sociometric scales within each, we should predict that superior students would receive more intellectual and social choices in the heterogeneous groups due to the fact that students at each ability level tend to choose their more able classmates. Conversely we should predict that slow students would rarely be chosen by others in a heterogeneous situation, not even by other slow students. Slow students would, on the other hand, necessarily be chosen in a context made up of slow students. Average children too would seem more likely to be chosen and to function as group leaders when placed in homogeneous classes. However, the difference between average students in homogeneous classes and those in heterogeneous classes would not be likely to be as marked as in the cases of superior and slow students.

Results

Analysis

In the tabulation of sociometric data, equal weights were given to each of the three choices on the scale. Each student received a sociometric score for each of the six questions (two social and four intellectual) based on the number of nominations he received for that particular question. The number of nominations for each of the two social items were added for each student yielding a composite social score. Similarly, a composite intellectual score was obtained by summing the nominations for the four intellectual items for each student.

It has been noted that choices within the homogeneous classes are forced choices as far as an academic level is concerned. For example, within a superior class all choices must be for fellow superior students. The frequency distributions of intellectual and social composite scores of sociometric choices in homogeneous classes were examined to compare the distribution of intellectual and social choices for superior, average, and slow students.

The data from heterogeneous classes were analyzed in greater detail. As with the homogeneous classes, individual scores for each question and composite social and intellectual scores were tabulated. The nominations for each question were compiled so that both chosen and chooser in heterogeneous classes were identified as superior, average, or slow. The average number of nominations per student was computed for superior, average, and slow students for both the social and intellectual composite scores. The frequency distributions of social and intellectual composite scores in heterogeneous classes were also examined.

Distribution of Social and Intellectual Nominations

Table 18 reports the analysis of individual questions for the superior, average, and slow students in heterogeneous classes. The results show that on every question superior students were chosen more frequently than average students, and slow students were the least often selected. There was some variation among questions and between the social and intellectual sets.

In the social area, the nominations for a friend to go on a picnic were an average of 3.97 choices for superior students, 3.39 for the average students, and 1.96 for the slow. This is the question with the least difference among groups and it is the only question with no link to the school situation. Even then, the superior students were chosen twice as often as the slow.

TABLE 18

MEAN NUMBER OF NOMINATIONS RECEIVED FOR EACH QUESTION ON THE SOCIOMETRIC SCALE PER ACHIEVEMENT GROUP IN HETEROGENEOUS CLASSES

	Eight Heterogeneous Classes		
	Superior	Average	Slow
N	31	146	21
Individual Questions			
Social			
Picnic	3.97	3.39	1.96
School Dance*	4.62	2.96	1.28
Intellectual			
Originality	9.72	2.27	0.19
Excellence	7.91	2.66	0.48
Critical Thinking	6.88	2.61	0.85
Open-mindedness	5.88	2.74	0.76

*For purposes of comparability the double scores on the question have been halved.

The school dance choices were 4.62 for the superior, 2.96 for the average, and 1.28 for the slow.

In the intellectual area, the question designed to elicit choices of original, creative students gave the superior students their highest score -- a mean of 9.72 as compared with 2.27 for average, and 0.19 for slow students. The next highest score for the superior students was obtained on the question relating to excellence, with the superior averaging 7.91 choices per student, the average 2.66 and the slow 0.48. The critical thinking question followed with a mean score of 6.88 for superior students, 2.61 for the average students, and 0.85 for the slow students. Superior students received fewer choices for the question dealing with open-mindedness than for the other intellectual questions, yet they were still chosen more than twice as frequently as average students, and eight times more frequently than slow students (mean for superior was 5.88, for average was 2.74, and for slow was 0.76).

Table 19 reports the composite social and intellectual scores for superior, average, and slow boys, girls, and totals in heterogeneous classes. The average number of nominations per social question for superior boys and girls was 5.03 and 4.42 respectively while the total was 4.81. For average students the mean for social questions was 2.74 for boys, 2.67 for girls, and 2.70 for the total. Slow boys showed a mean of 1.69 while the slow girls had a mean of 1.36. The total mean for slow students was 1.56. The average number of nominations per intellectual question was 9.44 for superior boys, 7.48 for superior girls (8.74 for total

TABLE 19

MEAN NUMBER OF NOMINATIONS RECEIVED FOR COMPOSITE QUESTIONS ON THE SOCIOMETRIC SCALE PER ACHIEVEMENT GROUP BY SEX IN HETEROGENEOUS CLASSES

	Superior			Average			Slow		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
N	20	11	31	66	80	146	13	8	21
Per Question*									
Social question	5.03	4.42	4.81	2.74	2.67	2.70	1.69	1.36	1.56
Intellectual question	9.44	7.48	8.74	2.10	2.19	2.15	0.52	0.36	0.46
Per Total									
Social question (two questions)	15.08	13.27	14.44	8.22	8.01	8.10	5.08	4.14	4.72
Intellectual question (four questions)	37.75	29.91	34.97	8.41	8.76	8.60	2.08	1.43	1.83

*This method of presentation provides comparable figures for both social and intellectual choices.

superior), 2.10 for average boys, 2.19 for average girls (2.15 for total average), 0.52 for slow boys, and 0.36 for slow girls (with 0.46 as total slow). The composite social questions and the composite intellectual questions showed the same trend.

An examination of Table 19 reporting nominations in heterogeneous classes for sex differences indicates that superior boys were nominated more frequently than superior girls. Average boys and girls did not appear to differ in this respect. Slow boys were nominated with somewhat greater frequency than slow girls.

Table 20 reports the sociometric nominations made by superior and slow students (choosers) and received by superior, average, and slow students (chosen) in heterogeneous classes for each of the six sociometric questions. The figures in this table should be regarded with some care, since the N's for each group complicate the data. For example, 37 choices for 173 average students is proportionately much less than 37 choices for 34 superior students.

The nominations made by superior students show, when viewed in terms of relative proportions, that superior students selected those from their own group with much greater frequency than they did from the average group. And notably few slow students were chosen by superior students. Slow students followed the same pattern in making their choices. In relative terms, they chose superior students most frequently, followed by choices for the average, and gave the fewest nominations to other slow students. The trend was more pronounced for intellectual than

TABLE 20

SOCIOMETRIC NOMINATIONS MADE BY SUPERIOR AND SLOW (CHOOSERS) WHICH WERE RECEIVED BY ACHIEVEMENT GROUP (CHOSEN) IN HETEROGENEOUS CLASSES[a]

	Superior Chosen	Average Chosen	Slow Chosen
N	34	173	24
Superior Choosers			
Question:			
Social			
Picnic	24	53	4
School Dance[b]	27	57	2.5
Intellectual			
Originality	45	40	1
Excellence	47	37	0
Critical Thinking	38	44	0
Open-mindedness	31	48	0
Slow Chosers			
Social			
Picnic	8	58	8
School Dance[b]	10.5	45	5
Intellectual			
Originality	31	37	0
Excellence	21	46	3
Critical Thinking	21	33	3
Open-mindedness	19	44	2

[a] Since all students did not complete all questions, there appear to be some discrepencies. Special care must be taken to note proportional differences.

[b] The double choices on this question have been halved to provide comparable data.

for social questions. For example, slow students were seldom selected from their own group for intellectual nominations, although their social choices from their own group were somewhat more frequent.

Table 21 summarizes the percentage distribution of intellectual and composite scores received by superior, average, and slow students in homogeneous and heterogeneous classes.

An examination of the distribution of intellectual nominations shows a vivid contrast between homogeneous and heterogeneous classes. While a relatively even distribution for each group was shown with the homogeneous classes, the heterogeneous classes exhibited a definite hierarchy with 35.71 percent of the superior students having more than twenty-nine nominations and more than half of the superior having thirteen or more nominations. The average heterogeneous students had a more even distribution, although still 50.30 per cent had four or fewer nominations. The slow showed the most distinct contrast with none of their members receiving more than eight nominations and with 96.30 percent in the "0" and "1-4" categories.

The comparison of homogeneous and heterogeneous classes in the area of social nominations, although not so distinct, reveals similar trends. The homogeneous data indicate that with all three groups the greatest percentage of nominations were received in the "1-4" category (although the slow group had equal percentage in the "5-8" category). Neither the superior nor the

TABLE 21

PER CENT OF STUDENTS IN ACHIEVEMENT GROUPS RECEIVING INTELLECTUAL AND SOCIAL NOMINATIONS IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

		Superior	Average	Slow
Intellectual Nomination				
Homogeneous				
N		101	146	78
	30+	10.89	9.59	5.13
Number of	21 - 29	9.90	7.53	5.13
	13 - 20	9.90	10.27	17.95
Nominations	9 - 12	9.91	13.70	20.53
	5 - 8	18.81	16.44	23.08
Received	1 - 4	39.60	37.67	25.64
	0	1.98	4.79	2.56
Heterogeneous				
N		42	171	27
	30+	35.71	6.43	0
Number of	21 - 29	14.29	4.09	0
	13 - 20	4.76	12.28	0
Nominations	9 - 12	7.14	9.36	0
	5 - 8	21.43	17.54	3.70
Received	1 - 4	14.29	40.94	70.37
	0	2.38	9.36	25.93
Social Nomination				
Homogeneous				
N		101	146	78
	30+	0	2.05	0
Number of	21 - 29	8.91	4.11	2.56
	13 - 20	20.79	17.12	15.38
Nominations	9 - 12	14.85	14.38	10.26
	5 - 8	16.83	26.03	33.33
Received	1 - 4	28.71	30.82	33.33
	0	9.90	5.48	5.13
Heterogeneous				
N		42	171	27
	30+	2.38	1.17	0
Number of	21 - 29	16.67	4.09	0
	13 - 20	14.29	18.13	0
Nominations	9 - 12	11.90	10.53	18.52
	5 - 8	14.29	23.39	14.81
Received	1 - 4	30.95	35.09	51.85
	0	9.52	51.85	14.80

slow had any of their group receiving more than twenty-nine nominations while the average had 2.05 percent in that category.

In the heterogeneous classes, however, the superior were again at the top with 2.38 per cent of their group having above twenty-nine nominations. The average had 1.17 per cent and the slow had none. The superior were the most evenly distributed of the three sub-groups, and again the highest percentages (30.95 per cent for superior, 35.09 per cent for average, and 51.85 per cent for slow) of each group were in the "1-4" category. None of the slow students in heterogeneous classes received over twelve nominations.

The data on election to office (See Chapter 4. p. 66) show that the patterns of sociometric choice are concurrent with the patterns of social behavior actually taking place in the school. These data show that superior students were more frequently chosen than average students, this time in actual choice for active leadership. Few slow students in this research held offices of any kind.

Summary

The evidence of peer nominations of superior, average, and slow students in heterogeneous classes on a sociometric scale indicates that for both intellectual and social choices the superior students were by far the most frequently chosen. While the superior students in these heterogeneous classes were nominated on social questions three times as frequently as slow students in heterogeneous classes, they were nominated 15 times as often as slow students on intellectual questions. The choices for homogeneous classes were forced choices and therefore do not yield data that are comparable. In the homogeneous class of superior, average, or slow students, each student was awarded his social or intellectual standing on the basis of comparisons within his own ability group, thus forcing a gain in sociometric recognition by at least some average and slow students. Examination of the sociometric distributions within the homogeneous classes suggests that choices are more equally distributed than in heterogeneous classes. Data on election to school office are concurrent with sociometric findings.

Discussion and Implications

Although writers[2] are not in agreement with respect to the norms and customs of "adolescent society," all emphasize the importance of the peer group to the adolescent. Adolescence is the way-station between childhood and adulthood, and, to make the transition a complete and satisfactory one, certain events must transpire. The young person must find a place for himself in the adolescent society; he must approve of himself and see himself as having an acceptable role in a group. And the schools must make it possible for him to accomplish these tasks. If the adolescent is not accepted by his peer group, especially the peer group in school, he is often driven into antisocial behavior.[3] The school is, to a large extent, the center of the adolescent world and, for this reason, failure in the role of student and school member may also mean failure as an adolescent. In this section of the study we have examined social and intellectual acceptance patterns of slow, average, and superior students in both homogeneous and heterogeneous classes by the use of sociometric ratings. These will be reviewed in terms of their consonance with student achievement and performance and with teacher ratings, and also as they might affect the self-concept of the student.

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[2] James S. Coleman, Adolescent Society (New York: Free Press of Glencoe, 1961).
Edgar Z. Friedenberg, The Vanishing Adolescent (Boston: Beacon Press, 1959).

We have already shown, in regard to student participation in the active learning situation and with respect to the teacher's perception of the student as a learner and individual, that classroom or group structure may influence the development and growth of the adolescent. Homogeneous grouping increases active participation and communication in both social and academic terms for most adolescents and greatly facilitates such activity for slow learners. Teacher attitudes and ratings change as the group structure is modified; and, particularly for the slow, these ratings become more positive in homogeneous groups. In line with this finding we asked if a parallel change would occur in sociometric patterns. That is, are students influenced by the situation (homogeneous or heterogeneous grouping) as they rate their classmates?

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[3] The progressive alienation from the school is something that we often see in both slow learners and delinquents. It is well known that delinquents often have problems that are similar to those of the slow learner or that slow learners and delinquents are sometimes one and the same individual. Many cases of juvenile delinquency are illustrations of what happens to the slow when put in situations where they are not accepted by their teachers, peers, or selves.

We are well aware that in a heterogeneous group the superior students are further developed than other students in terms of abilities, are recognized on tests and report cards as achievers, and generally have parents with relatively high educational and occupational status. And we are also aware that the slow generally have fallen heir to the obverse of these conditions and make poor showings in a heterogeneous class. Smith, in reviewing a number of sociometric studies, concludes that ". . . 'acceptance' is positively correlated with intelligence, special abilities in school, (and) school achievement . . . ."[4] Since achievement and recognition of achievement is an important criterion for successful group membership, the slow in a heterogeneous classroom assume the position of a marginal group. The question arises then, in the case of the slow student particularly, as to how we can bring him into favorable interaction with his classmates. Will restructuring the class (assigning students on the basis of homogeneity of achievement) not only allow and encourage the slow student to use his skills and abilities (as was shown in our report of group discussion behavior) and foster the approval of his teacher (as was indicated in the results of teacher ratings) but also make it possible for him to get recognition from his peers?

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[4] Louis M. Smith, op. cit., p. 8.

Restating the situation, we see that the performance and particularly the perceived or apparent performance of a student is dependent on the nature of the group, on the content and kind of activities in the classroom, and on the teacher's leadership behavior and attitudes. These affect not only the student's motivations, his activities, his learning -- in short, his very behavior -- but also his peer-perceived social acceptability. Our results show that the restructuring of the frame of reference to a homogeneous group with a good learning atmosphere supplies conditions that rarely seem to be supplied in heterogeneous groups and that certain sociometric choice patterns must necessarily change as a result of this restructuring. For example, the slow are rated as intellectually and socially acceptable in homogeneous groups. The more positive ratings that certain students receive in the new assembly are, it is true, artificially built into the situation, but we feel that they, along with new patterns of participation and greater teacher acceptance will significantly affect how the student feels about himself.

As with all dimensions we have investigated, we find the situation is an interactive one. As teacher and peer ratings of students become more affirmative the participation and perfomance also improves. Functioning is closely related to the student's perception of himself as a group member, and in the class group his acceptance and recognition are based on his relative accomplishments. Homogeneous and heterogeneous ability grouping supply two different frames of reference, and the peer acceptance of a given student (slow, average, or superior) seems to be directly related to the group in which he is placed.

In the heterogeneous groups, students are keenly aware of the competitive nature of the classroom structure and the hierarchal patterns that result, and we find that teachers and peers generally agree as to where given individuals stand in that hierarchy. Those with the most ability or success in a given situation are chosen most often and by all levels of students; it is they who become the standard or ideal -- and to a great extent the criterion for acceptability in the group. In a heterogeneous class certain students are always at the bottom or the top of the "totem pole" and it seems to be students of the same description in all classes -- superior on top and the slow at the bottom. Wrightstone[5] and Johnson[6] have both reported that mentally handicapped children are least acceptable in normal classes. With these outside of the heterogeneous classroom, as they were in the Lansing situation, the academically slow fall heir to the lowest positions in our class structure. We find that not only do superior students choose themselves, but the slow also choose the superior. Thus the superior are chosen as both more intellectually and socially desirable by the slow who by this act imply that they find themselves less acceptable within such a frame of reference.

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[5] J. Wayne Wrightstone, et al., A Comparison of Educational Outcomes Under Single-Track and Two-Track Plans for Educable Mentally Retarded Children, Cooperative Research Project Contract, Number 6908, Project Number 144.

[6] Orville G. Johnson, "A Study of the Social Position of Mentally-Handicapped Children in the Regular Grades", American Journal of Mental Deficiency, 55 (July 1950), pp. 60-89.

It is apparent that there is a lack of acceptability of the slow by both classmates and teachers in a heterogeneous classroom. They are not only assigned to a group structure in which the standards for acceptance and recognition render their potential for participation inadequate, but also that the slow accept these standards as valid, apply them to themselves, and view themselves as intellectually and socially undesirable. Since these students are rarely chosen by themselves or by others, the statement by Jack Gibb: "The process of establishing membership in a classroom group is the process of both finding a niche in the group and also finding enough freedom to move in and out of the niche to build rich relationships with other members of the classroom group,"[7] takes on particular meaning, for in the heterogeneous class we see the slow as silent members in a static place.

A far different pattern of interactive relationships can be seen in the homogeneous classroom. The most obvious characteristic of the sociometric ratings is the fact that the average and particularly the slow are necessarily chosen more frequently within the homogeneous structure -- there is no other alternative. Since it is a supporting and reinforcing experience, being chosen, even in a situation of forced choice, is important for the student who has seldom been chosen on any basis by his peers. The group is a contrived group -- although probably not dissimilar to groups with which he will spend most of his adult life -- yet it is also a productive group and resulting individual activity may have positive effects if work habits develop which will be incorporated into the personality structure.

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[7] Jack R. Gibb, "Sociopsychological Processes of Group Instruction", The Dynamics of Instructional Groups: Sociopsychological Aspects of Teaching and Learning, Nelson B. Henry (ed.), (Chicago: The National Society for the Study of Education, 1955), p. 135.

Another important difference has been noted, and is seen as especially significant since it relates to cooperative learning and patterns of participation. Bennet[8] has described a cohesive group as one in which all members work together for a common goal, take responsibility, and endure frustration in their cooperative efforts. Moreover, she feels that factors contributing to such group loyalty are common language, thought processes and goals. That the homogeneous classroom more closely approximates this desirable group structure is evident as we see that not only was there more frequent participation by the slow and average in class discussions in the homogeneous classrooms, but also that this participation was more equally distributed among all members of the group. A similar tendency can be seen in sociometric choice patterns. A modified hierarchy still exists in the homogeneous group and this should be expected because the range of abilities to achieve, although restricted, still exists. (In any group there will probably be individuals who are more successful in terms of the achievement goals of the group than others, and who will be recognized as more acceptable for this reason.) However, when the group is structured in such a way that similarities of ability are emphasized in terms of achievement and the criteria for success and acceptability, the norm of the dominant group becomes more attainable for all and there is a more equal opportunity for successful membership. Thus, being chosen in the homogeneous classroom has great value, especially to the slow student, for it is related to meaningful group membership and participation. The goal of the group now more closely approximates each individual's abilities for achieving that goal.

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[8] Margaret E. Bennet, Guidance in Groups -- A Resource Book for Teachers, Counselors, and Administrators New York: McGraw Hill, 1955.

We have placed particular emphasis on the slow because the sociometric ratings indicate that in the heterogeneous classroom situation his position renders him unacceptable to others. In a homogeneous classroom, on the other hand, the ratings imply that such a student can perform relatively well because the learning situation is structured to his ability. In this context, the slow child and his peers may suddenly see that there are activities and norms other than those which apply to the large group -- that there exist standards which apply to him and in terms of which he is an acceptable member of a productive group. And finally, the fact that he is chosen on a sociometric will supply further reinforcement for this student in the learning situation -- especially in his views of his own academic and social accomplishments.

In summary, it can be seen that restructuring the frame of reference leads to a more frequent (for slow and average) and more equally distributed choice by peers. This is both made possible by and increases the effectiveness of a classroom structure which has been reorganized to augment student productivity. One of the most important results has been that the slow student finds himself an acceptable member of a peer group.

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CHAPTER 10

SELF-CONCEPT

Introduction

There is reason to believe that at least part of a student's performance is determined by his self view. For this reason, an area of concern in this research was the way in which students perceive themselves as school learners. We have seen that teachers view students who are comparable in ability quite differently when they are placed in class contexts which are dissimilar, even though they teach these similar students in the same day. We have also seen evidence that a new leadership group emerges when the membership of the class is altered in pattern. In the case of those with superior ability, a type of student destined to be a star in the heterogeneous class may be only a member of the galaxy in the homogeneous situation. A representative slow student, probably lower class and with speech patterns that might be described as rudimentary, will probably be a "silent man" in the heterogeneous class while his counterpart in the homogeneous group probably contributes eagerly and often.

The context or frame of reference seems to be of prime importance as a determinant of performance patterns and it understandably affects how individuals of a given description will be judged. The Latin scholar might easily become a nonentity in an advanced physics seminar, especially if the discussion were a critique of the second law of thermodynamics. Similarly, differences in response would be predicted between two ninth grade students of comparable competency but each placed in a different situation, one where he is among those who communicate (read and speak) in a style and at a level similar to his own and the other who finds himself literally "out of his class" -- where he cannot read assigned books and can only partially understand the oral exchanges. The abilities of classmates and the opinions, probably unspoken, that peers-of-the-hour hold of a given student, as well as the judgments and expectancies of the teacher, form the classroom context in which a given student performs.

Two measures were used in this area. One was the Ability Self-Concept rating (See Student Interest Survey I, question 13, in Appendix B, p.viii) all students were asked to make at the end of the experimental year. The other was the Concept-of-Self-as-School-Learner Scale (See Appendix B, p.xxi) also administered to all students at the end of the experimental year.

To determine the Ability Self-Concept a relatively simple self-rating device was employed which merely asked the student to compare his ability with that of his classmates, and rate himself either above average, about average, or below average. This procedure had been used in several previous studies and consistently had distinguished between slow, average, and superior students when these were placed in heterogeneous classes. The phrase "in this class" was added to the question for post-test administration in order to provide a more specific focus relative to the experimental grouping.

The Concept-of-Self-as-School-Learner Scale was developed from preliminary research[1] with 200 high and low achieving superior junior high school students. The major scale in this preliminary study was an adjective form adapted from Bills[2] to emphasize learner self-concept. Since the original adjective form had proved difficult to understand and was subject to misinterpretation even when used with superior students, it was decided to make an adapted form. Twenty brief sentences, centered about the pre-tested attitudes, were developed as more suitable for administration to students of all levels of ability. Of these twenty items, twelve were in positive form and eight in negative form. Interspersed in the scale were an additional five items which dealt with self-ratings on such characteristics as creativity, open-mindedness, and critical thinking.

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[1] This was developed from research done by the investigator and also by her research assistant. Some of the prior research is reported in Mary-Clare Milligan Burrows, "Indices of Self and Attitude Toward Environment in the Prediction of Achievement" (unpublished Master's thesis, Michigan State University, 1959).

[2] R. E. Bills, F. L. Vance, & O. S. MacLean, "An Index of Adjustment and Values," Journal Consult. Psychology 1951, 15, pp. 257-261.

Since the self-concept is formulated in reference to the perception of the environmental framework, changes in self-view would be predicted to accompany changes in class grouping. In particular, in this research, it would be predicted that equivalent students, in terms of academic competency, would view themselves quite differently in relation to interest in school and ability to learn if the academic environment were different, homogeneous on the one hand and heterogeneous on the other.

We have noted already that patterns of performance and participation as well as teacher and peer ratings vary in different directions for the superior student and the slow student in heterogeneous and homogeneous situations. Thus, it might be expected that slow students would see themselves as relatively more competent in a homogeneous situation than in a heterogeneous classroom, and that the reverse of this would be true for superior students.

Results

Analysis

The means of the Ability Self-Concept Rating made by superior, average, and slow boys and girls separately and combined in both the homogeneous and heterogeneous classes were computed. Differences in means between these subgroups were compared for the post-tests and the *t*-test for significance of difference was used.

The means of the Concept-of-Self-as-School-Learner scores made by superior, average, and slow boys, girls, and totals in the homogeneous and heterogeneous classes were computed. The significance of the differences between the mean Concept-of-Self-as-School-Learner scores for these several subgroupings were examined in terms of t-tests.

Ability Self-Concept Rating

Table 22 reports the means of the Ability Self-Concept Rating for superior, average, and slow boys, girls, and totals. The test was administered at the end of the experimental year and the means were analyzed by t-tests to determine if differences between homogeneous and heterogeneous classes were significant.

At post-testing superior students had a mean rating of 2.19 in homogeneous classes and 2.83 in heterogeneous classes. The difference of 0.64 was significant at the .001 level.

For homogeneous average classes the post-test mean rating was 2.15 while for heterogeneous classes it was 2.17 -- these differences were not significant.

At post-testing slow students had mean ratings of 2.24 in homogeneous classes, yet the mean ratings remained at 1.71 for slow students in heterogeneous classes. This difference was significant at the .001 level.

These data show that slow students in homogeneous classes were seeing themselves as "average" at the end of the experimental year. The positive self-rating of these students is supported by the frequent comments of the teachers[3] of homogeneous slow classes.

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[3] Unsolicited comments from the teachers that they liked the homogeneous slow groups and grew to like them better were common. It is quite possible that "experimenter outcome-orientation bias" (cont., p.187)

TABLE 22

COMPARISON OF MEAN ABILITY SELF-CONCEPT RATINGS BY ACHIEVEMENT GROUP AND SEX BETWEEN HOMOGENEOUS AND HETEROGENEOUS CLASSES[a]

	Superior			Average			Slow		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Homogeneous	2.21	2.18	2.19	2.19	2.10	2.15	2.21	2.30	2.24
Heterogeneous	2.92	2.73	2.83	2.15	2.19	2.17	1.69	1.75	1.71
t[b]	5.29[e]	3.76[e]	6.43[e]	.40	.95	.36	2.32[c]	2.81[d]	3.97[e]

[a] Scale for Ability Self-Concept Rating:

3 = above average
2 = about average
1 = below average

[b] two-tailed *t*'s

[c] $p < .05$

[d] $p < .01$

[e] $p < .001$

that many of their boys and girls became increasingly responsive and cooperative in the course of the year (Chapter 8).

Concept-of-Self-as-School-Learner Scale

Tables 23 and 24 report the mean scores on the Concept-of-Self-as-School-Learner Scale for superior, average and slow students in homogeneous and heterogeneous classes. Table 23 reports the results of the analysis of differences between students in heterogeneous and homogeneous classes using the t-test. Table 24 reports the results of the analysis of differences between superior and average and between average and slow boys, girls, and totals within the homogeneous and heterogeneous classes also using the t-test.

Table 23 shows that mean scores for the Concept-of-Self-as-School-Learner Scale for superior students in homogeneous classes tended to be slightly lower than those for superior students in heterogeneous classes. The mean for superior boys in homogeneous classes was 17.3 and in heterogeneous classes 18.4. The means for superior girls were 21.1 in homogeneous classes and 22.7 in heterogeneous classes. Total means for superior students were 19.9 in homogeneous classes and 20.4 in heterogeneous classes. There were no significant differences found between either sex group or for totals.

(See Robert Rosenthal, "On the Social Psychology of the Psychological Experiment," American Scientist, June, 1963, pp. 268-283) is a factor here. If so, this favorable teacher attitude may be necessary in order that homogeneous grouping of slow students be a satisfactory experience for these young people.

TABLE 23

COMPARISON OF RATINGS OF CONCEPT-OF-SELF-AS-SCHOOL-LEARNER BY ACHIEVEMENT GROUP AND SEX AND BETWEEN HOMOGENEOUS AND HETEROGENEOUS CLASSES[a]

	Superior			Average			Slow		
	Boys	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**
Homogeneous Means	17.3	21.1	19.9	13.6	14.6	14.1	11.8	10.4	10.9
Heterogeneous Means	18.4	22.7	20.4	11.8	13.6	12.7	4.2	7.8	5.5
$\underline{t}^b$	.56	.71	.32	1.21	.74	1.39	2.67[c]	.70	2.53[c]

[a] The Concept-of-Self-as-School-Learner scale consisted of twenty items with a four place response scale: (a) "not like me", (b) "somewhat like me", (c) "mostly like me", and (d) "just like me", receiving a weight of 1-4 respectively. Since there were twelve positively scored items and eight negatively scored items, the maximum possible score was 40 while the minimum possible score was -20.

[b] two-tailed t's

[c] $p < .05$

Mean scores on the Concept-of-Self-as-School-Learner Scale for average students in homogeneous classes were 13.6 for boys and 14.6 for girls while in heterogeneous classes boys scored 11.8 and girls 13.6. Total mean scores were 14.1 for average students in homogeneous classes and 12.7 for average students in heterogeneous classes. Although the trend for average was reversed from that of superior students, the differences, again, were not significant.

The mean score for the Concept-of-Self-as-School-Learner Scale for slow homogeneous boys was considerably higher than for slow boys in heterogeneous classes. The mean for slow boys in homogeneous classes was 11.8 and in heterogeneous classes was 4.2. This difference was significant at the .05 level. The mean for girls in homogeneous classes was 10.4 and in heterogeneous classes 7.8. Although girls in homogeneous classes scored somewhat higher than those in heterogeneous classes, the difference was not significant. The total mean for slow students in homogeneous classes was 10.9 and in heterogeneous classes 5.5. As with the slow boys, the difference here was also significant at the .05 level.

Table 24 shows comparisons of the mean Concept-of-Self-as-School-Learner scores for superior and average, and for average and slow boys, girls, and totals within heterogeneous and homogeneous classes and reveals greater differences for most comparisons within the heterogeneous classes than within homogeneous classes.

Differences significant at the .01 level were found between the mean scores of every comparison of superior and average students in both grouping situations, with the exception of the comparisons

TABLE 24

COMPARISON OF RATINGS OF CONCEPT-OF-SELF-AS-SCHOOL-LEARNER BETWEEN ACHIEVEMENT GROUPS IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior Mean	$\underline{t}^a$	Average Mean	$\underline{t}^a$	Slow Mean
Homogeneous					
Boys	17.3	2.16[b]	13.6	1.42	11.2
Girls	21.1	4.89[c]	14.6	1.98	10.4
Total	19.9	5.58[c]	14.1	2.47[b]	10.9
Heterogeneous					
Boys	18.4	2.45[b]	11.8	3.08[c]	4.2
Girls	22.7	3.54[c]	13.6	2.04[b]	7.8
Total	20.4	4.12[c]	12.7	3.91[c]	5.5

[a] two-tailed $\underline{t}$'s

[b] $p < .05$

[c] $p < .01$

between superior and average boys in both homogeneous and heterogeneous classes which were significant at the .05 level. Superior students received the highest mean scores in all cases.

No significant differences were found between the means of average and slow boys or girls in homogeneous classes when analyzed separately. However, the difference between the total means of average and slow students in homogeneous classes (2.47) was significant at the .05 level. Marked differences were found between average and slow students in heterogeneous classes. The difference between average and slow boys in heterogeneous classes (3.08) was significant at the .01 level, as was the difference between the total means of average and slow students in these same classes. The difference between the mean scores of average and slow girls in heterogeneous classes (2.04) was significant at the .05 level.

Summary

Two measures were used to assess the self-concept of students in the experimental situation. The Ability Self-Concept Rating (a three-point scale) and a twenty-item Concept-of-Self-as-School-Learner Scale were administered to all students at the end of the experimental year. Five additional items (dealing with view of self as creative, open-minded, and able to think critically) were incorporated in this latter scale.

At the end of the experimental year, superior students in homogeneous classes perceived themselves on the Ability Self-Concept

Rating as average in comparison with other superior students[4] in their class, while superior students in heterogeneous classes continued to rate themselves higher than their average or slow classmates. The difference between superior students in homogeneous and heterogeneous classes at the end of the experimental year was significant at the .01 level, with the heterogeneous students having the higher rating. Slow students, on the other hand, had higher scores in homogeneous classes. The difference between slow students in homogeneous and heterogeneous classes at the end of the experimental year was significant at the .01 level.

On the Concept-of-Self-as-School-Learner Scale administered at the end of the experimental year, differences in mean scores for superior, average and slow students in heterogeneous classes were distinct. Differences between mean scores for superior and average students in homogeneous classes were also distinct, while scores for slow students in homogeneous classes more closely resembled those for average students.

Discussion and Implications

Although we can never precisely determine the relationship of attitude-personality variables to situational variables, psychological research indicates that certain relationships exist. We have shown earlier that particular students (slow) communicate when placed in a homogeneous group structure (which we assume is relatively unthreatening) but rarely talk in a heterogeneous group. In trying to get them to participate we have put them in a likely situation and they have become a good deal more productive.[5] (Our evidence shows, as a result of this changed performance and this different level of productivity, that teachers and peers view these slow students differently.) Behind these variables of behavior (emerging in part from situational variables) lies the personality or self of the individual, which we can partially understand by studying the self-view or self-concept.

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[4] This was, of course, true and provided for these able students a much-needed antidote, i.e., the knowledge that they are not always best.

In this chapter we are concerned with the adolescent's concept of himself and particularly with his view of self in a social setting, the classroom. It is our assumption that his picture of himself depends, at least partially, on the view that he believes others have of him. We further assume that his self-view has origins in his early development and bears the imprint of a life-time of events or his interpretations of these events. Out of these influences and his subjective interpretations of them the student has, as Cronbach says, formed a ". . . picture of what he is like and what he can expect of himself."[6] This description of himself is, in terms of the self-concept, that of which he is capable at any given time. It embraces, as Jersild[7] has noted -- the sum total of all that he can call his -- including systems of ideas, attitudes, values, commitments.

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[5] Refer to chapter 7.

[6] Lee J. Cronbach, Educational Psychology (New York: Harcourt, Brace and Company, 1954), p. 38.

[7] Arthur T. Jersild, op. cit.

We find our thinking in accord with current thinking in ego psychology, i.e., that, to quite an extent, adolescance is the time when an individual establishes personal identity -- recognizes his own unique pattern of attributes and becomes aware of his own individuality. Friedenberg defines adolescence as ". . . primarily a social process whose fundamental task is clear and stable self definition. . . . Adolescence is the period during which the young person learns who he is and what he is, and what he really feels. It is the time during which he differentiates himself from his culture, though on the culture's terms."[8] (our emphasis)

It should be noted that adolescent culture is not only the world at large but is especially the world of agemates and classmates. Thus the peer group becomes an important frame of reference. The previous section on peer ratings (sociometrics) showed how these were strongly influenced by group structures and that a slow learner could easily be an isolate in a heterogeneous class or a "chosen" member in a homogeneous class. Similarly, the self-concept (as it relates to ability and interest in school learning) has, as its frame of reference, the classroom.

There are as many aspects of self-concept as there are kinds of psychic phemomena. However, concept-of-self-as-school-learner cannot be dismissed as a small or unimportant consideration even with those students who say they do not like school. In the first place, one part of the personality cannot be affected atomistically; rather, the total organism reacts. Secondly, the school and school learning are dominant forces in adolescent society and, as such, are of great importance in how the adolescent views himself. To be a school learner is a basic role for the adolescent. As Lindesmith and Strauss indicate, "Severe disorganization of behavior is brought about when a person conceives that he has failed in a basic role. This is equivalent to saying that he assumes certain activities so important that if he fails in performing them, he believes himself a failure as a human being. Failure in a basic role almost necessarily spreads to other associated roles."[9] If an adolescent fails in school and is viewed as a failure by his teacher and classmates, the deepest mischief is the damage to his assessment of himself.

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[8] Edgar Z. Friedenberg, op. cit., p. 9.

Thus, in viewing our interaction phenomena (the variables that we see as dynamically synonymous), if we place the facet of self-concept in central focus we see reflecting back toward it and thus influencing it a number of activities and attitudes -- classroom performance, teacher ratings, and peer ratings. Whether a student has a positive or negative concept-of-self-as-school-learner is related, to a large degree, to his feelings of social acceptance. These feelings are, in turn, dependent upon his actual performance and productivity[10] as well as the way that he feels his teacher and classmates evaluate him, both as a student and as a social (or human) being. Thus we can see that concept of self develops to a large extent out of the classroom situation -- how the individual performs and how others view him and his productions and achievements. Our findings have shown that there are great variations in the ability of individuals to do school tasks and in their styles of verbal communications and that these co-exist with group processes and social relationships -- all of which result in interpretations made by self and others with respect to social and intellectual acceptance.

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[9] Lindesmith and Strauss, op. cit., pp. 624-25.

[10] A certain minimum level of student involvement in the classroom learning tasks seems necessary for self respect.

In heterogeneous classes results followed an expected pattern: the superior students said they were above average, the average rated themselves as average, and the slow saw themselves as below average. Students in homogeneous situations rated themselves differently but accurately in terms of this new frame of reference. However, in homogeneous classes all groups saw themselves as close to average (indicates flexibility and accurate perception of environment). The heterogeneous class was designed as a microcosmic representation of the macrocosm of the school at large. Slow students who were in the heterogeneous class situation, where their ability status position was similar to the position they held in the total school population, saw themselves as below average. Average students ranked themselves similarly whether they were in homogeneous or heterogeneous sections. (This seems quite reasonable for in both class situations they were essentially average in ability.) Superior students in the heterogeneous classes rated themselves as relatively superior.

A further indication of flexibility of self-view comes from the results of the Concept-of-Self-as-School-Learner Scale administered at the end of the experimental year. On this measure students were not asked to rate themselves in relation to others and in terms of a limited frame of reference such as a heterogeneous or homogeneous classroom. Instead they were asked to report their attitudes toward specific aspects of school learning. Quite understandably, superior students reported that they liked school and school subjects better than average students, and average students were generally more interested in school learning than were slow students. In both homogeneous and heterogeneous class situations superior students expressed significantly more positive attitudes toward school learning than did average students. However, there were no significant differences between the superior when comparable students were placed in both homogeneous and heterogeneous or between average students in both homogeneous and heterogeneous classes. On the other hand, slow students in homogeneous classes showed a more positive concept-of-self-as-school-learner than those in heterogeneous classes. In other words, for average and superior students the view of self in relation to classroom learning may be fairly well established and not directly influenced by a modification of group structure taking place in one class period during the school day, whereas the slow learner's self-concept is much less stable.

That the attitude of the slow learner varies from one situation to another is understandable for two reasons. In the first place, the homogeneous class situation for slow students was in distinct contrast to the situation in which comparable slow students found themselves in the heterogeneous classes. The homogeneous class was a situation where they were markedly more productive and received higher ratings than in the heterogeneous placement. In contrast to the slow students, productivity as well as teacher and peer ratings for average and superior students in the homogeneous classes was relatively less favorable when compared with the heterogeneous situation. Secondly, the slow students, as has been pointed out before, are essentially need-motivated and may be more open to the influences of a situation -- in this case success and recognition in the classroom (as occurred in homogeneous grouping) as against failure and lack of recognition (as occurred in heterogeneous grouping). As a result, scores on Concept-of-Self-as-School-Learner for slow students in homogeneous classes were only slightly lower than those for average students in the homogeneous situation and significantly different, in the case of the boys, from the scores obtained by slow learners in heterogeneous classes. These results support the hypothesis that the homogeneous classes had a positive effect on the self appraisal of the slow student.

Current views in mental health and psychotherapy support the premise that human beings tend to develop in positive directions and to value self when opportunities for such growth is offered. It is our premise that the adolescent, and especially the psychologically immature slow learner, whose self-view is still very much "in process" will respond quickly and positively (in terms of self-view) to an accepting and rewarding environment. Similarly, he will reject both himself and the situation in which he is largely disregarded and unrewarded. The implication is that the relatively positive self-concept of the slow learner that grows out of one situation (in this study, a one-hour homogeneous English class meeting once a day) will permeate other parts of the student's life, but we do not have evidence of this in the present research.

Our goal, self-acceptance, is related to accepted mental health objectives and educational aims. Essentially we agree with Jersild's description of the self-accepting adolescent as one who ". . . takes life in stride . . . (and) . . . is free to make use of his endowments. He feels that he has the right, so to speak, to live and be, to use his capacities and to develop his interests without having constantly to apologize or make amends or feel guilty or ashamed or pretend to be what he is not." In contrast, the adolescent who rejects himself ". . . is not comfortable with himself as he is or realistically might be. He tends to blame himself. He may have a low respect for his worth or a low regard for his right to be himself."[11]

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[11] Arthur T. Jersild, *op. cit.*, pp. 19, 20.

Much of what has been said applies particularly to the slow learner. In artificially structuring a group which will give the slow learner acceptance, the charge may be made that the school is fostering an unnatural situation and one not like "real life." However, sociologists who study adult reference groups find cohesion among people who are alike. In a quite similar way kinds of homogeneity in the classroom situation may not only give the student freedom to be himself, to produce, and to be accepted, but they also may prepare him for meaningful participation in the groups with which he will live and work as an adult. However, this whole idea of the narrowly defined group seems to run counter to the American Dream of equal opportunity. But there may be a way out of this dilemma. People do usually work and live with a group like themselves, but they are also part of a larger social order to which they must relate.

A further point is that every human being with certain given capacities has a need to use these abilities and will use them if the environment is a facilitating one. The very use will tend to build both abilities and confidence and lead toward a fuller development of potentiality -- in turn a necessary condition for self acceptance. Both of these are, of course, goals of education and were achieved to an extent in the homogeneous classes. All of this is particularly important to the slow learner who must somehow be given work he can do and the safety to try before he will begin to use the abilities he has.

Through this entire study there has been a recurring emphasis on the slow. We feel it is important to draw attention to this group for several reasons. Homogeneous grouping seems to offer the most tangible benefits to the academically untalented. We are concerned that there has been little research done with slow learners that would give us clues as to how best to provide this group with adequate learning experiences.

This is particularly evident when the self-concept data is considered. In summary, our findings and observations seem to show that through meaningful experiences -- discussions with other adolescents on topics that have relevance to his life and the reading of books that are written in words he can read -- the slow student can grow toward a positive discovery of himself. We find he does not advance markedly in academic skills in either homogeneous or heterogeneous situations but, as has been indicated, in the homogeneous group he is producing and participating in significant ways. Given the nature of his need motivation, his fundamental task must be that of discovering and accepting himself. All of this is most apt to occur in a frame of reference where it is acceptable and relatively easy to participate, such as in a homogeneous class, and which, we hope, will lead the student to a self-accepting and self-confident use of his abilities. Here we found that the slow student could talk about his family and neighbors in terms that might help him to understand them and himself as well as the fourth grade Reader's Digest selection he was reading. His classmates listened and continued in a similar vein and without the impatience that the academically talented often show for such mental excursions. Furthermore, an able teacher found she could handle the situation with an appropriate language style. It was our hope, as our evidence tentatively indicates, that the slow student might emerge from this experience with a feeling that he was moderately competent and quite worthwhile. The combination of being a worthwhile member of a productive group, being able to identify with the group and seeing their patterns as similar to his own helps the adolescent to develop both a realistic and a healthy self-concept. As Friedenberg sees it, ". . . a youngster who does not know what he is good at will not be sure to know what he is good for; he must know what he can do in order to know who he is."[12]

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[12] Edgar Z. Friedenberg, op. cit., p. 17.

CHAPTER 11

ATTITUDE TOWARD THE EXPERIMENTAL ENGLISH CLASS AND SCHOOL

Introduction

This section dealing with attitudes toward the experimental English classes and interest in school is the final part of our study of the effects of homogeneous and heterogeneous grouping. Due to the pilot nature of the work, the effort was to obtain only relatively gross results which would help us to set more limits and develop more appropriate instruments at a later time. Part of our original research strategy was to develop hypotheses and to work out a theoretical construct. Thus, despite the limitations of our data we have made an attempt to establish linkages from one set of relationships to another and to develop a framework in which to order empirical findings.

This framework involves the simultaneous consideration of student achievement and productivity with evaluations of student performance by teacher, peers, and eventually by the performing individual himself. In turn, these attitudes and feelings of the student toward a specific class as well as toward the school environment in general, undoubtedly influence the situation. Just as the responsive environment fosters student productivity, so does the responsive and productive student help to make a better environment both for himself and others. Specifically, this section reports the analysis of student responses to questions about their interest in the English classes involved in this research as well as their responses to general questions about interest in school and schoolwork.

Attitudes toward the English class were obtained on an instrument that was administered on a cross-sectional basis at the end of the year. At this time the students were asked to answer a series of four open-ended questions dealing with attitudes toward their experimental English class. For example, they were asked, "What do you like most about it? Explain." and "Would you like to have more classes like this? Why?" Further, the students were asked if they had any changes to suggest and if they would recommend the class for other students. Other questions (See Appendix B , p. xxiii) were asked relative to interest in school subjects and interest in school in general. In an effort to study change, students were asked to list freely from among curriculum offerings subjects "liked most" and "liked least" in both pre- and post-testing sessions. Interest in school, a more general view of education and perhaps only slightly related to interest in the experimental classes, was studied by asking students to check yes and no in answer to the following question: "Is school work interesting to you?" This information was obtained both at the beginning and the end of the experimental year.

Since the learning situation[1] for the average student in the heterogeneous class (where five out of six students were average) was much like that in the homogeneous class (where all students were average) negligible differences in attitude were predicted for average students placed in the two group structures. On the other hand, we expected that students at the extremes of the ability distribution would find the homogeneous and heterogeneous situations markedly different one from the other. Further, in our previous work with homogeneous slow and superior groups we had developed teaching approaches that seemed more suitable for these students than did the middle-ground, textbook approach, thus we expected superior and slow students in homogeneous classes to show different and more favorable attitudes toward the experimental class than would their counterparts in heterogeneous classes. These attitudes were expected to be apparent in relation to the particular class and toward English as a subject matter area.

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[1] In the heterogeneous class most students fall within the average range (five out of six) and the text also is most appropriate for average students since ninth grader texts are, by design, written to meet the need of the average ninth graders. Some efforts were made to supply some more advanced materials to superior students and some elementary level work for the slow but time limitations made such adjustments almost impossible. The situation in the homogeneous average group is not too different. All students assigned to this group were chosen because they fell within a relatively narrow achievement range -- the average range -- and materials, including the ninth grade text, were essentially the same as in the heterogeneous situation. Discussing with the teachers the materials and approaches for teaching heterogeneous and homogeneous average classes we came to realize that both were taught in a very similar fashion.

Results

Analysis

The data were of two kinds -- cross-sectional information obtained at the end of the year which compared groups of equivalent students in homogeneous and heterogeneous situations, and pre- and post-test data which showed relative gains of comparable students who had spent a school year in the two different situations.

Both kinds of data were obtained in order to study attitudes toward and comments about the experimental English Classes. An analysis was made of the number of times English was referred to in the "liked most" column and ratings at the beginning of the year were compared with year-end ratings. In order to analyze the discrete responses obtained from the open-ended questions and to make generalizations from the qualitative data obtained in answers to these questions, all of the responses made by superior and slow students were read and the responses made by the average were sampled.[2] On second reading each student was rated as having indicated a generally positive or negative response to the class. Responses were also studied for trends and statements were selected as typical of these expressed attitudes to use in the results and discussion section. (Additional information is in the Appendix.) The information, obtained at both the beginning and the end of the experimental year, from the question "Is school work interesting to you?" was tabulated and the distribution is presented.

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[2] The responses made by average students in homogeneous and heterogeneous groups taught by the same teacher were compared.

Attitude Toward English

Table 25 reports the percentage of superior, average, and slow students in homogeneous and heterogeneous classes who included English among school subjects they "liked most" at the beginning and end of the experimental class sessions. All students (superior, average, and slow) when pre-tested in both homogeneous and heterogeneous situations seemed to like English about equally well. Examination of Table 25 shows that about half of the students in all classes listed English among their most liked subjects. At the end of the study, however, almost two-thirds of the students in all groups chose English as "most liked" with one exception -- the slow students in heterogeneous classes did not become more fond of English as the year progressed. In fact, with this group there was a slight decrease in preference for English, compared with the one-third increase for the slow students in homogeneous classes.

Attitude Toward Experimental Class

Table 26 reports the analysis (into positive and negative categories) of responses to more extensive questioning of the experimental population about their attitudes toward the English classes at the end of the study. Typical responses are quoted in the Appendix C , p. ix .

Table 26 shows that of the 58 slow students in homogeneous classes, 48 (83 per cent) liked the homogeneous classes. Most of these expressed an appreciation for the opportunity to do enjoyable

TABLE 25

DISTRIBUTION OF THOSE WHO LIKED ENGLISH MOST BY ACHIEVEMENT GROUP IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior	Average	Slow	Total
Pre-Testing				
Homogeneous				
Number	79	115	59	253
Per Cent Listing English "Liked Most"	49	41	52	46
Heterogeneous				
Number	23	120	21	164
Per Cent Listing English "Liked Most"	39	43	52	44
Post-Testing				
Homogeneous				
Number	79	115	59	253
Per Cent Listing English "Liked Most"	58	64	73	64
Heterogeneous				
Number	23	120	21	164
Per Cent Listing English "Liked Most"	70	65	48	63

TABLE 26

POSITIVE AND NEGATIVE RESPONSES ON ATTITUDE TOWARD EXPERIMENTAL HOMOGENEOUS AND HETEROGENEOUS CLASSES BY ACHIEVEMENT GROUP

	Positive		Negative	
	Number	Per Cent	Number	Per Cent
Homogeneous				
Superior	73	92	6	8
Average	66	77	20	23
Slow	48	83	10	17
Heterogeneous[a]				
Superior	12	33	24	67
Average	40	77	12	23
Slow	12	60	8	40

[a] For this table, each heterogeneous class was matched with each homogeneous class by using the teacher as the common element.

work at their own pace that the experimental English class offered.[2] Positive responses from the slow students included the comments that they could understand the teacher better (what she was saying) and could do the work. They also reported that they liked an "atmosfear" where everyone took part -- where there was lots to do but the work was not too hard.

Other slow students in homogeneous classes did not directly refer to the learning situation but stated that they liked "the teacher" or "the kids" or "the discussions". Only 10 of these 58 students (less than 20 per cent) gave indications that they did not like the class. Of these, three did not elaborate, one appeared baffled by the questionnaire, one was 'not interested" in English, one could not understand the teacher, one felt the class wasn't learning, and three mentioned it was "too-easy" for them. Some slow students mentioned that the class would have been better if there were no slow or problem students in it, evidently feeling that there were a few students of this description in their much appreciated special section. One student commented that he particularly liked being with "normal kids like me". No student expressed resentment at being grouped, in general the feeling was that being in a special class with a pleasant teacher, understandable materials, and "kids like me," was more a privilege than a penalty.

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[2] Their poor spelling, added to a cryptic and elliptic style, did not disguise their feelings although it did reveal their severe retardation in the use of the written language.

Slow students in heterogeneous classes more often liked the class (12 students or 60 per cent liked English) than not, although the enthusiasm was somewhat less than in the homogeneous situation. Their reasons for liking the classes generally did not include comments indicating an awareness of the learning situation but instead seemed to be focused on such ideas as liking "the teacher" or "the kids." In contrast, the slow students who did not like the heterogeneous class were concerned with learning problems -- several complained that the work was too hard and others thought that such classes were best for smart students who could get good grades in English.

The results for average students, as reported in Table 26, demonstrate that the majority of average students in homogeneous and heterogeneous classes responded positively, and the percentage of positive and negative responses was the same in both contexts (77 per cent positive and 23 per cent negative). Not only was the distribution of positive and negative responses identical in the homogeneous and heterogeneous classes, but also the specific comments about the classes seemed to be much the same. Average students appreciated the quality of instruction and the class discussions, but a comparison of homogeneous and heterogeneous answers shows that markedly few were aware of the structure of their respective classes. Rather than reacting to differences in classroom structure, they reacted to classroom activities such as discussions as they related to the stimulation of interest, promotion of learning, and appreciation for English.

The results of the analysis of questionnaires completed by superior students in homogeneous and heterogeneous classes are also reported in Table 26. Most superior students expressed their ideas freely and with considerable feeling. Of the 79 superior students in homogeneous classes 73 (92 per cent) refer to the superior learning opportunities and the special tone in these classes. (See Appendix C, p. ix for typical responses from this group.) In general they felt the homogeneous classes provided a superior learning situation -- opportunities to work with challenging ideas, and, as the students phrased it, "to make more progress in less time" -- that is, to move ahead at their own rates and to avoid repetition of what was already known. They also commented on the learning climate saying that they liked being treated as adults, they enjoyed the freedom and the opportunities for independent research and appreciated the atmosphere which was described as both cooperative and stimulating. While superior students in homogeneous classes frequently referred to the greater challenge, they also reported it was easier to understand, as well as more comfortable and natural than the usual (heterogeneous) class situation.

There were six negative responses (8 per cent) with five of these coming from one class. The questionnaire coincided with a minor problem that arose between one teacher and her students, and results at the time the questionnaire was administered may not have been typical of a general attitude. Only one student felt he was not qualified and preferred to be in the regular classroom, however he supported the idea of a homogeneous class for other able students.

Although most superior students thoroughly enjoyed their homogeneous English classes some expressed a concern about having too many specially grouped sections. They felt one or two homogeneous classes would be sufficient and expressed a fear that challenge from too many directions would mean a burden of work which they could not shoulder without frustration and lowered school marks.

In the questionnaires completed by 36 superior students in heterogeneous English classes, twelve (33 per cent) students indicated that they had positive attitudes toward the class. Four of these stated that they liked the class because it was easy, the others simply said they liked the class and did not elaborate. One mentioned, however, that it is a good idea for superior students to be aware of the problems of slow students. Dissatisfaction with heterogeneous classes was expressed by 24 superior students (67 per cent). Some simply noted that the heterogeneous class was repetitive and dull, others did not elaborate. Most of these students wanted to have more challenging work as well as classmates who could meet that challenge.

The interest expressed by heterogeneous superior students in another kind of class structure, usually referred to as a group of able students, seemed to stem from dissatisfaction with an English class geared primarily to the average student and which included some slow students who required special attention. Typically, these heterogeneous superior students complained of the slow pace and their personal need to handle a greater and more difficult quantity of material. This expressed concern was coupled with a feeling of boredom resulting from the repetition of material long since learned. Some students mentioned feeling constrained with respect to the expression of their ideas in the heterogeneous class where they felt they "stood out" or "were different." Throughout, the responses reflected a desire for more work, greater challenge, and opportunity to gain deeper understanding.

Attitude Toward School Work

Table 27 reports the distribution of the yes, yes and no, and no responses to the question "Is school work (in general) interesting to you?" as made by the superior, average, and slow students, in homogeneous and heterogeneous classes at the beginning and end of the year. It appears that, in spite of the increased interest in English there was no substantial change in interest for school work in general during the ninth grade.

Summary

Attitudes toward the experimental (and control) English class were assessed by comparing the number of times English was referred to as "liked most" at the beginning and end of the experimental year and by analyzing responses to four open-ended questions asking for an evaluation of the English class. On the first measure, there was an over-all increase in preference for English with one exception -- slow students in heterogeneous classes. This group showed a slight decrease of interest while there was a one-third increase for slow students in homogeneous classes.

TABLE 27

DISTRIBUTION OF YES, YES AND NO, AND NO RESPONSES TO QUESTION "IS SCHOOL WORK INTERESTING TO YOU?" BY ACHIEVEMENT GROUP IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior	Average	Slow	Total
		Pre-Testing		
Homogeneous				
Number	79	106	59	244
Per Cent Listing				
Yes	91	76	75	80
Yes & No[a]	8	7	8	8
No	1	17	17	12
Heterogeneous				
Number	23	121	20	164
Per Cent Listing				
Yes	87	80	55	78
Yes & No[a]	9	9	15	10
No	4	11	30	12
		Post-Testing		
Homogeneous				
Number	79	106	62	247
Per Cent Listing				
Yes	84	76	61	75
Yes & No[a]	11	10	13	11
No	5	14	26	14
Heterogeneous				
Number	23	131	21	175
Per Cent Listing				
Yes	83	80	76	80
Yes & No[a]	13	5	5	6
No	4	15	19	14

[a] This category includes those students who either had no definite feelings one way or the other or those who checked both categories.

The analysis of responses to the open-ended questions shows that 83 per cent of slow students in homogeneous classes and 60 per cent of slow students in heterogeneous classes responded favorably. The majority of average students in homogeneous and heterogeneous classes responded positively -- 77 per cent in each context. The responses of superior students varied most from heterogeneous to homogeneous situations -- 92 per cent of superior students in homogeneous classes and 33 per cent in heterogeneous classes responding favorably.

Attitudes toward school work in general were assessed by the direct question, "Is school work (in general) interesting to you?" and computation of responses indicated that there was no substantial change in interest in school work for any ability group in homogeneous or heterogeneous classes.

Discussion and Implications

This exploratory study of students' (slow, average, and superior) attitudes toward different classroom contexts (homogeneous and heterogeneous), and the differing patterns of instruction and participation that has grown out of these contexts, gives us further insights into the complex social and psychological phenomena that is an intimate part of communication process and that "central psychological reality"[3] -- the discovery of fuller realization of self. Because the data were primarily of a descriptive nature, statistical analysis has not been used. However, careful inspection and interpretations in terms of other data we have obtained, as well as reference to the theoretical framework we are using, show an essential consistency. This consistency is especially marked in the responses of the slow students who revealed a central pattern in terms of the several dimensions in which they were viewed by others and by themselves. Specifically, when they achieved and were productive their teacher and classmates approved and rated them correspondingly and these ratings were concurrent with more positive ratings of self and more acceptance of an interest in the learning situation. The students too were aware of these reciprocal relationships. As one slow boy said when asked what he liked best about the class, "The Teacher and her atitud twards the class. also the clases atitud twards her." Thus complex relationships can be increasingly clarified by relating each phenomenon to others and by tracing a common pattern throughout.

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[3] Gardner Murphy, "New Vistas in Personality Research," The Personnel and Guidance Journal, Vol. XL, No. 2 (October, 1961), p. 121.

This attitude toward the English class and the school is, in a sense, an extended view of self -- self functioning in a specific environment. It seemed necessary, since our concern was to know as much as possible of the totality of the individual and how he learns, that we explore attitudes toward the classroom. Prior to studying this dimension we had mainly taken our variables from those generally accepted in social psychological research and had used instruments which we had adapted from those being used by other experimenters in these fields. However, we wanted to give the students an opportunity to respond freely, to use their own words, and, thus, open-ended questions asking for attitudes toward the class and school seemed the most direct and profitable approach. These also allowed us to look at another facet of the student's learning experience -- his attitude toward this learning -- which might not only supply new insights in its own right but also might clarify our perception of the whole. It was our hope that this descriptive material would enhance what we knew or guessed and open areas that we might have ignored. We not only wished to study added dimensions but also sought to strengthen previous findings by discovering, if possible, basic consistencies.

In studying this aspect of the student's learning we inquired as to which subjects he "liked most" and "liked least." There was a substantially increased interest in English shown for all levels (superior, average, and slow) and in the two grouping contexts (homogeneous and heterogeneous), except for the slow students who had been placed in heterogeneous classes. Our prior findings on these students had shown them to be responding in more negative ways to school work, and the fact that interest in English did not increase was no surprise. According to their teachers they read little and wrote less, and our records showed that they rarely participated in class discussions. This non-activity, as well as the nature of the population with which they were compared, seemed to contribute strongly to negative ratings (as well as low grades) from their teachers and to both intellectual and social rejection by their classmates. The denouement was that these slow students in the heterogeneous English classes rated their ability as low and had low concepts of themselves as school learners. It is understandable that as a result their liking for English was not enhanced by this experience despite the caliber of the English teachers and the experimental aura that may have increased interest in English for the other students.

At the end of the year we asked each student to make specific comments on his English class. The homogeneous and heterogeneous classrooms seemed to provide similar learning situations for average students, probably because the heterogeneous class can be considered as primarily homogeneous for average students. Their remarks dealt mainly with classroom activities as related to quality of teacher and effectiveness of approach to the curriculum content rather than with these activities in relation to different types of learning resulting from the use of new materials and a new relationship with classmates. The average students seemed to have similar assignments in the two different contexts and generally did not show an awareness of grouping. They appreciated a "good teacher," both enjoyed and "learned from class discussions," and generally recommended the class for anyone who "wanted to learn English."

These reactions are consistent with the other results for average students given that they are provided with a good teacher in both situations. The teacher, peer, and self ratings of average students in homogeneous and heterogeneous contexts did not differ. The teacher, nature of classmates, and classroom activities probably have as much effect on the average as they do on the superior and slow. However, a homogeneous classroom appears to have little advantage over the heterogeneous in meeting the needs of the average student. One student typically remarked that he enjoyed learning in his English class because it was "easy enough to make it enjoyable but hard enough to be interesting." Thus we would conclude that due to the fact that the majority of students in a heterogeneous classroom are average students (five out of six) and that classroom presentations are designed and directed toward these students, homogeneity per se is not necessary for efficient learning of average students, but neither does it have any adverse effects.

However for the superior and slow students the homogeneity or heterogeneity of their respective classes made a great difference. Unlike the average student who has 24 or more counterparts in a heterogeneous classroom, each superior and slow student would have only two or three others who achieved at a similar level. Our questionnaire and interview data on students indicate that they are fully aware of their positions in the total structure and demonstrate the differing reactions between majority and minority groups. The comments made by the superior and slow students in relation to their feelings toward the class situations revealed much about affective and cognitive dimensions.

Both superior and slow students commenting on their homogeneous sections said they liked accepting teachers, cooperative classmates and an enthusiastic group spirit. However, there were differences -- the superior were more concerned with morale and a general esprit de corps, while the slow wanted recognition and affection (basic needs) from their teacher. The slow appreciated having much more help, and help which was on a personal basis from their teachers. In contrast, the superior valued freedom and opportunities to be self-directing. However, the superior were intensely social, as are most adolescents, and wanted an audience -- of their peers -- to listen to their presentations. Independent study in a heterogeneous class where "reporting back" was not possible did not appeal to them. Nor did they like to give a report to a class, even if the report were on a favorite topic, if the class did not understand and show interest in the presentation. Both superior and slow students expressed a desire to be with other students like themselves. They both wanted interaction with their peers but the slow were much more concerned about their acceptance by their peers and also by the teachers. In general, the superior students felt that they already had acceptance -- now they wanted a place to share ideas. The slow, in contrast, were more concerned with finding friends.

Similarities and differences between superior and slow were also noted in the cognitive realm. With both, there was appreciation expressed when the class went beyond the book. The superior were eager to learn new things and struggle with difficult concepts. The slow appreciated being able to understand what was going on -- a new experience -- which seemed to occur when they could relate school learning to their lives. Both reported that being interested (involved) and getting things done (being productive) were important. However, the superior student saw learning as a matter of dealing with ideas and getting satisfaction from them. As one homogeneous superior student said, "In this class there are more stimulating ideas and the freedom to express them." The slow, as we noted earlier, were much more involved with establishing an identity and finding acceptance among their peers than with pursuing such abstractions as ideas and learning. One of the slow students in a homogeneous section commented, "This is a good class because it is easier to learn with people you like and who like you." Another liked the class, ". . . because I always feel more comfortable in here and the more I feel I'm apart of it, the more I learn." Thus it would seem to a great extent that, to be satisfying, classmates must offer social support for the slow while the superior students need and appreciate intellecutal interaction.

The reports of the slow and superior indicated that they understood and accepted their relative competencies. The slow noted that the class helped them "learn to read" and would be good for others "who have problems like me" and "need help the way I do." The superior commented on gaining a better understanding of such concepts as imagery and personality representation and that they liked to work with others who have lots of ability and who like to talk about ideas. The slow revelled in keeping busy and having lots of things to do (having a variety of activities) while the superior who autonomously direct themselves into innumerable activities appreciated having the time to discuss one topic (at length and in depth) for a whole hour.

The slow commented generally that they felt the heterogeneous classes were for the more able students, "the ones who talk smart."

For example, one heterogeneous slow student when asked whom he would suggest to be in the class next year said, "The smart ones. I don't know what she [the teacher] is talking about some time." Occasionally the superior students saw the heterogeneous classes as a spot for slow students and made recommendations such as "for people who have trouble with their English." But since teachers talk at a fairly high level in heterogeneous classes and the discussions are dominated by the superior, such recommendations are relatively unusual.

The personal versus intellectual "need" dimensions were also apparent when the students commented on how they felt about their teachers. The typical comment of the homogeneous slow student was, "I like my teacher. She helps me." This means personal help. The slow student appears to value highly the fact that his teacher recognizes him as a potential learner worthy of help. The superior student seems to have already satisfied these needs for acceptance, recognition, and help and thus appreciates a teacher who "accepts that I can learn on my own, [and] doesn't have all the answers." Such students seek the challenge of the unknown and the difficult whereas the slow are almost pathetically grateful to have something they can understand, to find they actually can learn, and to get encouragement from the teacher as they do their work.

In summary, many of the superior and slow students in the heterogeneous classes as well as those placed in homogeneous sections, liked their teachers and their classes. However, they indicated they were getting something different in the heterogeneous context from what their counterparts received in homogeneous classrooms. Rather than having their cognitive (superior) and emotional (slow) needs met, superior students in the heterogeneous classes felt the lack of challenge and stimulation while slow students more often felt left out or uninvolved in classroom learning. As one said, "The teacher didn't gripe at me. She don't pay any attention to me ether. So I sleep or look at a magazine. My other classes. They don't care about me ether. So I sleep all hour in peace."

CHAPTER 12

SUMMARY AND SUGGESTIONS FOR FURTHER RESEARCH

In the past few years there has been a growing concern with the adequacy of secondary education. The staggering increase in secondary school enrollment which has resulted from the post-war population explosion has brought with it an ever-increasing awareness of the problems we must face if we are to provide adequately for the educational, social and emotional needs of the current and coming generations of students. We have become aware of the fact that, on the basis of increased enrollment alone, we will have to build new facilities, train more teachers, and develop new solutions to large-scale problems in order to meet these needs. Along with the near-universal recognition of the need in secondary education for expansion and change has come an increased readiness to explore the possibilities for the development of new methods of differentiating instruction teaching and of classroom grouping. Finally there is a continuation of interest in the individual and how he may develop fully in all senses -- socially and emotionally as well as intellectually. This means that as we make administrative changes and introduce new approaches to teaching that we must study the individual with great care. It also means that we must squarely face the inadequacy of our present system and be mercilessly self-critical as we re-examine older and often inappropriate methods.

In this study we have attempted to explore some of the effects of homogeneous grouping in the classroom in terms of certain educational goals to which we are committed. Central among these objectives is the encouragement of the full development of the potentials of the individual, with his unique pool of accomplishments, skills and abilities, and his own style of life. Maslow has termed this maximum development of individual potential "self-actualization". We are in accord with those who picture the fully-developed, self-actualizing human being as one who is characterized by a security within himself which enables him to approach life with zest and enthusiasm, and to make full and creative use of his unique capabilities in pursuit of the good life for himself and for others. We also feel that education should set for itself the crucial goal of creating an environment in which the basic needs of the individual will most readily be satisfied, thus freeing him to become aware of his potentialities and to learn to realize them. We believe that it is only when the individual has achieved a substantial degree of physiological and psychological security that he is free to develop fully the "higher cognitive processes", -- creativity, responsibility and concern for others.

In our study we employed both standard measurement procedures and others which were designed to evaluate additional variables which we felt were important. The results of our investigation confirmed our preliminary misgivings about the adequacy of standardized achievement tests for measuring the kinds of learning in which we were primarily interested. It is our contention that most commercial achievement tests now available measure mastery of content and rote memorization ability. We have grave doubts as to their adequacy in reflecting what we feel are some of the bases of the true nature of the learning experience. Thus we were not surprised when the results indicated no consistently significant differences between any of our groups in reading or language ability as a result of differential grouping.[1] Indeed, we were somewhat gratified to note that the effect of placing students in a homogeneous group with a special non-traditional course content does not seem to lower their productivity, as measured by standard achievement tests.

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[1] After completing the present research with the gifted where we had again tried to develop seminar-type classes that would foster critical and creative thought -- a program that we felt was mandatory if we were to nurture growth motivation -- we decided to do some trail-blazing. Our approaches, we felt, had been too much out of the usual textbook and too much a piece with the old curriculum. Theoretical orientation, aesthetic sensitivity, philosophical ways of looking at reality, and humane concerns were not being taught or measured to the extent that we desired. As a result of this reconsideration and a determination to do something truly different, even revolutionary, we began to build a new course for ninth graders in 1960 under a Title VII, USOE Grant. The project was entitled, "The Effectiveness of Special Training with Audio-Visuals in Changing Aspirations of Intellectually Superior Students." In this social studies-careers course a new looseleaf, scrapbook style textbook was developed (to introduce students to the world) and ten documentary-biographical films (which showed the style of life, thoughts and value systems of creative-intellectual adults) were produced. Not only did we develop a course which seemed more relevant to our aims but we were also able to find new and much more appropriate assessment instruments. Post-test results, comparing the experimental group with the control, indicated significant differences on scales measuring theoretical orientation, originality, thinking introversion, and critical thinking. With the experimental girls we found all of these differences to be significant and also found what we interpreted to be marked growth in aesthetic and humanitarian interests and a desire for advanced education and creative occupations.

In our search for an adequate objective measure of the kind of productivity with which we were concerned -- the development of thought processes of both a critical and creative nature and problem-solving skills -- we were continually hampered by the lack of any yardstick which could be considered adequate. We feel that there is a pressing need for the development of such measures if educators and psychologists are to be able to explore more thoroughly the conditions which encourage or impede inquiry and discovery processes. We made an exploratory attempt to measure this type of intellectual involvement and productivity by means of discussion analysis. Although we were not wholly satisfied with the results of our efforts, we feel that perhaps we were looking in the right direction. It would seem logical that the development of objective techniques for measuring the learning process should begin with a dynamic approach such as the study of classroom interaction.

It seems to us that an analysis of the dynamics involved in the discussion group and in the process of communication would lead to conceptualizations which would be integral to the total context of the learning experience. One approach which might prove fruitful is the content analysis of the nature of communication within a discussion group -- categorized in terms of such concepts as repetition or paraphrasing of prior communication, concretization (illustration), abstractification and generalization, implication, allegoric imagery, and eclectic relating. It might also be valuable to re-study some of Dewey's original formulations and attempt to test his concepts in a classroom interaction setting. Another suitable approach might be the analysis of language structure, since the structure of thought is necessarily very closely related to the structure of language, as Whorf[2] has pointed out. At any rate, the problem of measuring the development of thought processes is richly deserving of further study.

Several findings and implications from the analysis of class discussions of the present study are of considerable theoretical and practical importance. Results indicated that there were differences in speech patterns in the three groups -- slow, average, and superior. For example, there was more active involvement on the part of slow students when in a homogeneous group. In this situation contributions revealed students' thought processes rather than parroting of textbook words. The teacher played an important role in this situation. The smaller range of individual differences in the homogeneous groups seemed to allow the teacher to be more aware of specific needs. The student was able to express his ideas more freely and have them evaluated within the frame of his own group. This allowed for more involvement and productivity, particularly in the slow group, which in turn enhanced the self-concept.

The results of this study of student discussions indicated that for all students -- whether superior, average, or slow -- the homogeneous setting resulted in greater involvement and class productivity. It is our position that learning is most effective and most valuable when the student is dynamically involved in the process (of teaching and learning) rather than being a passive receptacle. This involvement comes from giving the student freedom to relate and organize material that is meaningful and the latitude to formulate and express his discoveries. Such internalized and highly motivated processes are likely to contribute to self-actualization as well as school learning. The most efficient learning -- academic and personal -- comes through this direct experience. For the student is practising the art of thinking -- that is, of formulating, sifting and expressing ideas. Zuger has summarized quite clearly the results of this active experiencing in the learning process:

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[2] Whorf, Benjamin L. "Science and Linguistics" in E. E. Maccoby, T. M. Newcomb, and E. L. Hartley, Readings in Social Psychology, New York: Holt, Rinehart and Winston, 1958, pp. 1-9.

> There is physical, emotional and intellectual self-involvement; there is a recognition and further exploration of one's abilities; there is initiation of activity or creativeness; there is finding out of one's own pace and rhythm and the assumption of enough of a task for one's abilities at that particular time, which would include the avoidance of taking on too much; there is gain in skill which one can apply to other enterprises, and there is an opportunity each time that one has an active part in something, no matter how small, to find out more and more what one is interested in.[3]

Thus a valuable way in which to encourage learning and the development of the process of critical thinking is by furnishing an atmosphere in which the student is most likely to become dynamically involved in the learning process. We have seen that homogeneous grouping, if accompanied by appropriate teaching, can encourage such involvement. Superior students seemed to be challenged by the nature and level of discussion and by the presence of peers with whom they could exchange ideas. Slow students found that when they were in a setting in which both the type of material and level of presentation were geared to their needs, where the teacher offered a degree of unconditional acceptance, and when other students in their class were similar in ability, they could identify more easily with the values and aims of the class and thus become more involved in the educational process.

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[3] Zuger, B. "Growth of the individual's concept of self". AMA Amer. J. Diseased Children, 1952, 83:719

A further finding worthy of note was that in the homogeneous situation teachers could and did adapt their presentation and leadership to the level and needs of students. In the situation in which the range of abilities was greatly reduced from that of the normal heterogeneous class, teachers were able to give more attention to individual differences, as well as to provide an atmosphere in which the predominating needs of the class of students would be met (in the case of the slow students, acceptance, encouragement, and material geared to their abilities and interests). In the heterogeneous classes, adopted textbooks were inappropriate for those far above or below the mean, and teachers tended to aim their level of presentation somewhere between the average and superior students.[4] In such a situation the special needs of both the superior and the slow students were inadequately met, but the slow seemed to suffer most. The dominance of the superior in the heterogeneous class seems to inhibit and discourage their participation.

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[4] In all likelihood this was related to the domination of these discussions by the superior students in these groups and the lack of involvement of the slow students.

In contrast we find that in homogeneous classes the patterns of thought and communication which are prevalent are more appropriate to the level of ability of the majority of students. Here the teacher is able to present ideas in more generally suitable terms and to thus encourage a greater proportion of the students to engage in discovery and exploration. For the superior students, who are to quite an extent growth motivated, this involves a freedom to explore their own resources and to find answers for the difficult questions they want to ask. This will in turn augment learning, since the satisfaction of curiosity often promotes increased rather than decreased curiosity. For the slow students a homogeneous group with appropriate instruction can (and must) supply basic need satisfaction. And, it can supply a step or two forward in the quest for identity.

Briefly then, it seems that the diversity of abilities and backgrounds found in a heterogeneous class form a barier to communication, a barrier which is at least partially removed when students are placed with a group that is relatively similar in background and in thought and communication patterns.

In our presentation of results thus far, we have been forced to isolate the results of various measures (class discussions, teacher and peer ratings, self-concept) in various sections. Other than the emphasis on the inter-relatedness of these various classifications and their interactive properties, it is inevitable that the picture which has emerged has often seemed to have only a single facet. This summary provides an opportunity to correct this impression. Discussion of results will be in terms of the broad, consistent patterns which have emerged and emphasize more strongly the interrelatedness of various aspects of the study.

We have relied heavily throughout this study on Maslow's emphasis on deficiency and growth motivation. We have seen that in many ways it aids our understanding of the slow student if we characterize him as deficiency-motivated. Similarly, we understand the superior student and his willingness to try the difficult and his often enduring curiosity if we see him as characterized primarily by growth motivation. We feel that such a conceptualization is useful in attempting to draw together the results of our study, and that it provides a basis for teaching and understanding all adolescents, but especially those who deviate from the ability norm. The way in which this conceptualization is applicable to the understanding of the role of the classroom in the educative process may be inferred from the following statements of Maslow:

> In order to be able to choose in accord with his own nature and develop it, the child must be permitted to retain the subjective experiences of delight and boredom, as the criteria of the correct choice for him. The alternative criterion is making the choice in terms of the wish of another person. The Self is lost when this happens. Also this constitutes restricting the choice to safety alone, since the child will give up trust in his own delight-criterion out of fear (of losing protection, love, etc.)

> If the choice is really a free one, and if the child is not crippled, then we may expect him ordinarily to choose progression forward.
>
> The evidence indicates that what delights the healthy child, what tastes good for him, is also, more frequently than not, "best" for him in terms of far goals as perceivable by the spectator.
>
> In this process the environment (parents, therapists, teachers) is important in various ways, even though the ultimate choice must be made by the child:
>
> a. it can gratify his basic needs for safety, belongingness, love and respect, so that he can feel unthreatened, autonomous, interested and spontaneous and thus dare to choose the unknown;
>
> b. it can help by making the growth choice positively attractive and less dangerous, and by making the regressive choice less attractive and more costly.[5]

These statements seem to imply that education can aid the development of the student in several ways. First, it can provide an environment in which the basic needs of safety, belongingness, love and respect are satisfied. Second, it can allow and encourage the student to choose his own direction of growth, and to become involved in that self-inspiring process -- the need to know.

We shall find these formulations useful in drawing implications from our results as to the adequacy of heterogeneous and homogeneous grouping in meeting these goals. We have found that homogeneous grouping with its more individualized approach and its greater differentiation of instruction affects the functioning of the student in the classroom in terms of increased productivity, involvement, and interest. Homogeneous grouping also seems to have a direct bearing on the way in which the teacher perceives the student. We found that in the homogeneous group (given an appropriate curriculum and an emphasis on the growth of the individual student) teachers tended to express a more positive attitude. This was especially true in their view of the slow student.

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[5] Maslow, Abraham, Toward a Psychology of Being. N. Y.: D. Van Nostrand Co., 1962, pp. 55-56.

We might speculate that these changed perceptions of the teacher may be, in part, of the different context in which the student was placed -- the new frame of reference for evaluation. In part, too, they may have been the result of a change in the performance of the students in the homogeneous setting. Finally, the changed ratings of the teachers may come from the interactive process of more appropriate work and increased performance of the student. In other words, the teachers in the homogeneous group, in providing a warmer and more accepting atmosphere, could be expected to help the student toward a more positive self-concept and toward greater productivity. This, in turn could provide the teacher the rationale for giving additional rewards to the students.

In terms of the formulations of Maslow and their implications for educative goals, we would expect that the more positive and accepting values and attitudes of the teachers would produce a greater gratification of the basic needs of the students for belongingness, safety, love and respect. This change in attitude would be most beneficial for the slow students in whom these needs are least gratified.

This conceptualization deserves further exploration. We noted much earlier that slow students in homogeneous classes tended more often than others to mention their personal feelings toward the teacher and class members. They were aware of and grateful for the warm and accepting atmosphere in the special situation possible in the homogeneous class. Such comments offer indirect support for the contention that the slow students were more deficiency-motivated than were superior or average students. Further study might fruitfully utilize measures of these needs in slow students both before and after placement in a special, homogeneous setting in an attempt to study the effectiveness of the teacher and classroom situation in supplying certain basic satisfactions.

We feel that the question of what exactly is happening to produce these differences in teacher ratings in heterogeneous and homogeneous classes is one particularly worthy of study. We must continue to ask about the role of such factors as performance of students, changes in context of evaluation, and more adequate meeting of student needs, and how these all affect the more favorable attitudes of the teacher in the homogeneous situation.

We also noted changes that seemed directly related to the homogeneous group structure -- a situation where the range of abilities (reading and language skills) was modified and the students were more of a kind than in heterogeneous classes. As was mentioned earlier, sociometric data obtained from heterogeneous classes revealed a general selection of superior students in both intellectual and social choices by superior, average and slow students alike. They were the more frequently chosen, the elite as it were, on the basis of both intellectual and social nominations. The question that was asked -- can we arrange the group structure in such a way that other students and particularly the slow (who are rarely chosen in classroom sociometrics) will become more active participants and more frequently chosen for leadership roles. We had hypothesized that in the homogeneous groups the interpersonal perceptions of the students would change with the change in context. In a way such a result was inevitable. Grouping students by ability, in effect, forces them to choose others in their own ability range. This was our design and we wanted to know the effects of such choice, with its attendant participation and leadership roles, upon students who had been quite largely social isolates and intellectual rejectees in heterogeneous situations.

Homogeneous grouping, if we can accept peer choices as important for adolescents, becomes a valuable method for making available what White[6] calls "esteem income", particularly in the case of the slow student. In the homogeneous group the slow student is viewed more favorably, both by his teachers and his peers. His self-esteem is thus enhanced.

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[6] White, R. W., Lives in Progress, N. Y.: Dryden Press, 1952.

Harry Stack Sullivan and others[7] have emphasized the importance of the attitudes of others in identify formation. Particularly is this true in adolescence, when the esteem of the peer group is of primary importance to the individual. For this reason, it is of special significance that we can artificially induce changes in peer attitudes by restructuring the group to which the adolescent belongs. In so doing we are providing an additional source of acceptance, respect and support for the individual -- one which the slow student in particular almost pathetically needs. This, added to his increased productivity and the more accepting attitudes of the teacher, result in a more positive attitude toward self which in turn frees psychic energy for school tasks.

Not only does group acceptance favorably influence student productivity and involvement, but there may be still another side effect of a special group structure. The adolescent not only needs to be "chosen by" but he also needs to "identify with" significant others -- his agemates. We have shown that participation in homogeneous groups is more equally distributed among its members than in heterogeneous groups. Although a hierarchy of abilities still exists, it is much less pronounced than in heterogeneous groups. Hence, the discrepancy between the individual's ability and the values and norms of this group is likely to be much smaller than in the heterogeneous group, making it possible for the individual to more easily form a strong group identification. An analogue that seems appropriate here may be drawn by referring to the findings of Rogers and his co-workers[8] who report that when real and ideal selves become less discrepant mental health seems to improve. All of this should lead, if we study mental health in the classroom, to more growth motivation -- involvement, productivity, and provide the seed bed for "a need to know." Again, we find a many-faceted interactive effect, an interrelatedness between group performance, group acceptance, self-concept and productivity.

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[7] Sullivan, H. S., Conceptions of Modern Psychiatry, Washington: W. A. White Psychiatric Foundation, 1947, especially pp. 5-11 on childhood.

Also see Karen Horney's The Neurotic Personality of Our Time, N. Y.: W. W. Norton and Company, 1937.

As Erich Fromm (Man for Himself, N. Y.: Rinehart and Company, 1947) indicates, "Man can relate himself to others in various ways; he can love or hate, he can compete or cooperate; he can build a social system based on equality or authority, liberty or oppression; but he must be related in some fashion and the particular form of his relatedness is expressive of his character." (p. 58)

A further aspect of our investigation was focused on the self-concept and its relation to performance in homogeneous and heterogeneous groups. Many of the relationships discussed above may be understood in terms of the self-concept and conditions affecting success or failure in developing a positive self-concept. The self-concept, we feel, is of prime importance to the study of how an individual learns and how he reacts to the classroom situation. Everything he does is affected by and affects his concept of himself and his capabilities.

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[8] Rogers, Carl, On Becoming a Person, Boston: Houghton Mifflin, 1961.

The Ability Self-Concept rating used in this study indicated that, in general, homogeneous students tended at the end of the year to view themselves as average in comparison with the group in which they had been placed. In other words, they felt a part of the group. This was in sharp contrast to the situation in the heterogeneous classes, in which superior students saw themselves as superior and slow students saw themselves as below average. Not only do the results indicate a rather realistic self-appraisal of abilities, they also show that in the homogeneous situation the self-concept seems to change as the point of reference changes. This apparent flexibility in self-concept is not too surprising in the light of the fact that the measures obtained were rather closely related to the classroom--and especially the experimental classroom--situation.

However, when we see superior students reporting themselves to be average and slow students reporting an equal sense of being average, the question may be asked--is this reality and are we taking away from the able their pride in accomplishment and in being first, and are we giving to the slow a false sense of adequacy? We may inquire with John Gardner[9] "How can we be equal and excellent too?"

The results from the Concept-of-Self-as-School-Learner study provides answers here. The superior student feels "equal" in his like ability group (as indicated by the ability self-rating), but he also feels "excellent" (as his high scores on the concept-of-self-as-school-learner instrument show). The slow student in the homogeneous class also feels "equal" to his group but has a more modest evaluation of his ability to handle learning in a general sense. However, even on this latter evaluation he has a much more positive view of his ability and rates his capacity to learn somewhat near average. In contrast, slow students in heterogeneous classes see themselves much below average in ability when compared with classmates and also as lacking in ability to learn and deal with ideas in a general sense.

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[9] Gardner, John, Excellence, N. Y.: Harper and Brothers, 1961.

Adolescence has been seen by many as the stage at which a positive self-identity is formed, so that to a certain extent the self-concept is like clay that is still being shaped and is pliable. Of course, the self-concept is in a large part formed on the basis of a vast backlog of abilities, experiences, interests and attitudes. However, the role of school performance is particularly important to its formation, since schoolwork in our society forms the primary raison d'être for the adolescent.

What then are the implications of changes in the self-concept for increase in productivity and the facilitation of the learning process? Maslow has indicated how low self-esteem may block the growth process:

> We tend to be afraid of any knowledge that could cause us to despise ourselves or to make us feel inferior, weak, worthless, shameful...also, we tend to evade personal growth because this, too, can bring another kind of fear, of awe, of feelings of weakness and inadequacy.[10]

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[10] Maslow, Abraham, op. cit., pp. 57-58.

We have seen that it is useful to view the slow student as primarily deficiency-motivated. The hope is that special educational provisions such as grouping and differentiated instruction will satisfy basic needs for physiological and psychological safety. It should always be kept in mind that deficiency and growth motivation are not simple dichotomous variables, and that any individual falls somewhere on a continuum. It should also be recognized that the two can co-exist. Although the deficiency-motivated are said to be more dependent on the environment, all individuals (including the growth-motivated) continually must get reinforcement from outside sources. As Maslow[11] puts it, "...he _must_ be, to an extent, 'other-directed,' and _must_ be sensitive to other people's approval, affection and good will." However, the growth-motivated individual is relatively more autonomous and self-directed. In fact, says Maslow, "...far from needing other people, growth-motivated people may actually be hampered by them."[12] This characteristic can be seen in the many superior students who indicate a preference for spending long hours in independent research and reading.

We can see how this may occur in a heterogeneous classroom -- where, despite relatively greater participation on the part of superior students, we find them reporting feelings of constraint about talking (e.g., fear that others will not understand what they say) and of frustration with required curriculum materials that do not provide sufficient challenge.

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[11] Maslow, Abraham, _op_. _cit_., p. 32.

[12] Maslow, Abraham, _op_. _cit_., p. 32.

In view of these considerations, we can see how the providing of an environment in which the student is given ample opportunity to develop a more favorable self-concept is likely to result in increased productivity. This is especially true of the slow student, in whom, as we have seen, a negative self-concept may actually block further growth. In the case of the superior student, the homogeneous classroom may furnish an opportunity for a self-directed exploration of his capacities and potentialities to an extent which was not possible in the heterogeneous situation. This may come about as a result of the use of materials more appropriate for his ability and from the stimulating encounters made possible when discussion can be conducted at relatively abstract and philosophical levels.

In our study we found definite changes in the self-concept (or one area of the self-concept) as a result of placement in a special situation. We must emphasize as before that this result is an interactive one, and that these changes were probably a result of a complex of factors, reflecting at the same time an improved classroom performance, changes in teacher attitudes, and changes in peer group ratings. We found that students in homogeneous groups tended to rate themselves, on the ability-self-concept instrument, as average with respect to their group at the end of the experimental year.

Most of the results summarized above were reflected in the students' comments on their evaluations of the homogeneous classes. These comments reflected the slow and superior students' appreciation of the adjusted level of material and of the presence of students of similar ability. Slow students, and to some extent superior students, gave evidence of feeling more as if they belonged to the group, and all appreciated the fact that the teacher was able to focus on material appropriate for them and to devote more time to their problems and those of the other students of their own ability. For the superior students this took the form of an appreciation of the opportunity to be more self-directing and to handle more complex and difficult ideas.

The overall results of the study suggest that there is little advantage to average students in the homogeneous group over the heterogeneous group.[13] On the other hand, for the superior and slow students there appear to be a number of advantages, as we have attempted to show above. It is for this reason that our discussion has focused almost entirely on the superior and slow students.

What then are the factors which produced the results discussed above? First, students were placed in a group of students of similar ability. This factor in itself may account for many of the results: changes in teacher ratings, changes in peer ratings, differences in patterns of communication and participation, and indirectly, changes in the self-concept. Second, the curriculum was modified to fit the ability level of the student in a given homogeneous class. Again, this factor may account for a sizeable amount of the differences obtained, particularly in productivity and participation, interest, group identification, and self-concept. Third, the teaching methods were modified to meet the needs (deficiency motivation and growth motivation) of the groups. This was accomplished both because of the class composition -- which featured a much smaller range of abilities than in the usual homogeneous setting -- and because of the orientation and discussions provided for teachers as part of the experiment. Teachers were able to focus their attention on teaching students within a narrow range of ability, and in the homogeneous classes, no longer had the need (which the heterogeneous were relatively unsuccessful in satisfying) of doing something special for both slow and superior students. Thus in many ways teachers in the homogeneous settings were freed to do a better job of teaching.

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[13] It has already been noted that homogeneous and heterogeneous groupings are very similar for average students since materials would be much the same for both groups and since approximately twenty five (the majority) of the students in heterogeneous classes are average.

In conclusion, it should be emphasized that this experiment involved the use of only one class, an English class. The question arises as to whether successful programs of curriculum adaptation and facilitating group structures can be arrived at by means other than classroom grouping. We must also ask to what extent--how many hours during a day--is such grouping desirable (it would seem that a given curriculum and teacher adaptation to individual needs is always desirable). We feel that the results are encouraging, and indicate that homogeneous grouping when combined with special curriculum and teaching adaptations is a fruitful object for further study.

Several broad future goals for teaching practice and research seem to emerge from the results of this study:

1) There is a need to gain a greater understanding of differences among students, both as individuals with idiosyncratic personalities and abilities and as these individuals interact in groups. This understanding should encompass not only cognitive differences, but affective and social differences as well.
2) There is a need to re-examine current and traditional educational content and teaching techniques in an effort to utilize this understanding of individual differences to improve the quality of education for the student, considered both individually and collectively.
3) There is a need to achieve a more thorough understanding of the dynamic educational process. Teachers and researchers alike need to keep in mind the important cognitive, social and emotional aspects of the learning process and their interrelatedness.

From a heightened understanding of these aspects of education, we will be in a better position to work constructively toward achieving the educational goals we have set ourselves.

APPENDIX A

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PERCENTAGES OF SUPERIOR, AVERAGE, AND SLOW STUDENTS
IN EACH SOCIO-ECONOMIC STATUS LEVEL
OF THE WARNER SCALE

Warner Level	Superior	Average	Slow	N
1	15.50%	3.50%	0.0%	30
2	27.13	10.49	1.12	66
3	11.63	7.69	4.49	41
4	24.03	26.92	24.72	130
5	10.08	26.22	34.83	119
6	11.63	24.83	34.83	117
7	0.00	0.35	0.00	1
N	129	286	89	504

AGE, ORDINAL STATUS, AND FAMILY SIZE BY ACHIEVEMENT GROUP

	Superior	Average	Slow
Mean Age in Years	14.1	14.4	14.8
Ordinal Status			
First or Only Child	47.09%	36.07%	36.25%
Middle Child	23.54%	32.54%	42.50%
Youngest Child	29.41%	31.37%	21.25%
Median Family Size	3.0	3.4	3.9

MEANS FOR FINAL INTELLECTUAL AND SOCIAL RATINGS MADE BY TEACHERS FOR ACHIEVEMENT GROUPS IN HOMOGENEOUS AND HETEROGENEOUS CLASSES

	Superior	Average	Slow
Intellectual Ratings			
Questioning Attitude			
Homogeneous	4.0	2.6	2.8
Heterogeneous	4.4	2.9	1.9
Open-Mindedness			
Homogeneous	4.0	3.1	2.6
Heterogeneous	4.0	3.1	2.4
Creativeness			
Homogeneous	4.1	3.0	2.5
Heterogeneous	4.2	2.9	1.6
Research			
Homogeneous	3.9	3.0	2.4
Heterogeneous	4.3	2.8	1.4
Quantity Participation			
Homogeneous	4.1	3.1	2.8
Heterogeneous	4.2	3.0	1.6
Quality Oral Participation			
Homogeneous	4.2	3.2	2.8
Heterogeneous	4.5	3.0	1.8
Social Rating			
Acceptibility			
Homogeneous	4.1	3.1	2.9
Heterogeneous	4.3	3.1	2.1

APPENDIX B

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A DESCRIPTION OF THE ASSESSMENT MEASURES

The assessment measures used at the beginning and end of the ninth grade were the following:

I. Superior or academically talented students:

A. California Reading Test, Advanced: W. E. Tiegs and W. W. Clark, California Test Bureau, 1950. (One of the California Achievement Tests)

Includes a reading vocabulary test composed of four sections: mathematics, science, social science, and general vocabulary; a reading comprehension test with emphasis on following directions, reference skills, and interpretation of meanings. Scores on this test, as on all California Achievement Tests, are intended to indicate grade placement and percentile rank of students in relation to the general school population.

B. California Language Test, Advanced: W. E. Tiegs and W. W. Clark, California Test Bureau, 1950. (Another of the California Achievement Tests)

Consists of two parts; an English mechanics and grammar section which includes capitalization, punctuation, syntax, and recognition of incomplete sentences and parts of speech; and a section on spelling.

C. A Test of Critical Thinking, Form G: American Council on Education, 1952.

A 52-item scale of objective questions designed to measure the main abilities thought to be involved in the problem-solving aspect of critical thinking--the ability to (1) recognize and define a problem, (2) select information pertinent to its solution, (3) recognize stated and unstated assumptions, (4) formulate and evaluate hypotheses, and (5) judge the validity of inferences from the evidence given. A perfect score is 52.* When administered to 183 average and 126 superior eleventh graders (identified on the basis of IQ in a study by Drews*), the means were 21.22 and 37.63 for average and superior students respectively. The mean for 2,746 entering freshmen at Michigan State University was 31.40.** In this grouping study, the mean for superior ninth graders at the beginning of the experimental year was 27.88.

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*Cooperative Study of Evaluation in General Education, Paul L. Dressel, Director. "Instructor's Manual for the Test of Critical Thinking, Form G," The American Council on Education, Committee on Measurement and Evaluation, 1953 (Mimeographed).

D. Rokeach's Scale of Dogmatism: M. Rokeach, Michigan State University.

Consists of 40 statements to which the subject responds on a six-point scale ranging from "I agree very much" to "I disagree very much." These statements are designed to measure dogmatism or general authoritarianism. Scores on this scale can range from 40 to 280; the lower an individual's score the less dogmatic he is, while the high scorers (240+) are highly dogmatic.*** When this scale was administered to 180 average and 126 superior eleventh graders (identified on the basis of IQ in a study by Drews****), the means for average students were 173.14 for boys, 171.88 for girls, and 172.43 for totals. Means for superior students were 163.72 for boys, 159.03 for girls, and 160.89 for totals. Freshmen at San Jose State College, San Jose, California, scored as follows: 167.03 for boys, 156.16 for girls, and 160.35 for totals.***** In this grouping study, the pre-test means for superior boys, girls, and totals were 167.04, 154.55, and 160.21 respectively. The pre-test means for average boys, girls, and totals were 179.14, 176.63, and 177.78 respectively.

E. Student Interest Survey I

A 16-page survey designed by the investigator to provide certain pertinent information not available from the school records, such as self-ratings, ability self-concept, subjects liked and disliked, school interests, vocational aspirations, socio-economic level, and ordinal status.

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*Drews, Elizabeth M., A Study of Non-Intellectual Factors in Superior High School Students. USOE Cooperative Research Project, # E-2, 1960-1961.

**Lehmann, I. J., A personal communication, August 1963, in relation to norms developed on a study of MSU freshmen in 1961.

***Rokeach, Milton, The Open and Closed Mind, N.Y.: Basic Books, Inc., 1960.

****Drews, Elizabeth M., op.cit.

*****Rokeach, Milton, op.cit.

F. Teacher Ratings of Student Performances.

Teachers rated student performance at the end of each of three observed sessions, placing each student, and comparing the day's performance with that student's usual performance. At the end of the year, students were also rated on six intellectual qualities and one that indicated social acceptability.

G. Student Ratings of Classes.

Students evaluated each of the three observed sessions following the class discussions. At the end of the year students responded to questions designed to determine their attitude toward the English classes and toward school.

II. Average Students:

All the tests above were used with three exceptions. In the case of the two California tests, the Intermediate Form was given, and the Michigan State University Problem-Solving, Form B, was substituted for the ACE Critical Thinking Test.

H. Problem-Solving, Form B: Michigan State University, 1954.

Consists of 40 multiple choice items constructed very similarly to those in the ACE Critical Thinking Test and is designed to measure essentially the same kinds of problem-solving abilities, but at the junior high level.

III. Slow or Academically Retarted Students:

With this group the Elementary Form of the California tests was used. To supplement this group test information, an individual reading test, The Durrell Analysis of Reading Difficulty, was administered. Due to the readability level, the Rokeach tests could not be used. Furthermore, there was no test of problem-solving of an appropriate difficulty level. As with the superior and average student, teacher ratings of student performance and student ratings of classes were made in order to supplement the information obtained from the Student Interest Survey I. The latter was read aloud individually to each of the slow students in the homogeneous classes.

I. Durrell Analysis of Reading Difficulty: D. D. Durrell, World Book Company.

This test is designed for individual administration and consists of a series of graded paragraphs designed for the observation of both oral and silent reading comprehension and speed for individuals varying from non-reading to sixth grade reading level. (The test of silent reading comprehension was not used in this study.) The test is accompanied by a checklist for recording observations of reading difficulties.

STUDENT INTEREST
SURVEY I

1. Name____________Address____________

2. Birthdate________Present Age____Home Phone No.________

3. Sex: M___F___School____________Grade________

4. Father: Name__________Living?____Where born?________

Last grade attended:7 8 9 10 11 12 College 1 2 3 4 Graduate degrees____

Occupation________How employed at present________

5. Mother: Name__________Living?____Where born?________

Last grade attended:7 8 9 10 11 12 College 1 2 3 4 Graduate degrees____

Occupation________How employed at present________

6. Check extra-curricular activities in which you participate.

Sports________
Dramatics________
Debating________
Music________
Art________
Other (specify)________
____

7. List any offices you have held and the organization.

____
____
____
____
____

8. List your hobbies in order of their importance to you.

____
____
____
____

9. List recreational interest in order of preference.

____
____
____
____

10. Would you be interested to meet an adult with a similar interest? (check one)

____Very interested
____Interested
____Not interested

If so, which interest would you choose to learn more about?

11. School studies liked MOST - Easy Hard (check one) Liked LEAST - Easy Hard (check one)

________ ________
________ ________

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12. Do you find your studies in general easy________or hard______? (check one)

Comment on this____

____

13.*In comparison with your classmates do you consider your ability to be

(check one) ______below average
______about average
______above average

14. Is school work interesting to you? Yes_____No______

Why?

15. What do you want most to get out of school?

16. What really interests you the most? (number 1 to 6 in order of interest)

______Hobbies
______Extracurricular activities
______Recreation
______Friends
______School subjects
______An outside job

Discuss your activity in your first choice:

17. Have you had any vocational counselling? Yes________No________If yes, where

____

What was its nature (discussinn, tests, etc.)________________________

____

18. Name the jobs in which you have been employed (clerical, factory, etc.)

____

(circle the job which you have enjoyed mo

19. If you have a job at present, what is it?______________________

_____________________No. of hours per week______________

20. List, in order of preference, four occupations in which you would like to earn your living. Do not consider your abilities or opportunities for employment, but only whether you would enjoy the work.

Occupation	Reason for Interest
______________________	______________________
______________________	______________________
______________________	______________________

*Ability Self-Concept rating was judged from responses to question 13.

21. What is your present vocational choice?__________ Date selected __________

22. Reasons for your present choice? (check one or more)

Family wish __________
Friend's advice __________
Special aptitude for it __________
Financially profitable __________
Intellectually stimulating __________

Family tradition __________
Have some experience __________
Like working conditions __________
Have special opportunity __________
Other Reasons __________
____

Comment on your reasons: __________
____

23. What do your parents want you to do? __________

24. Are you considering any school or type of training other than high school to attain your vocational choice? Yes______ No______

How many years of training would this be?

Years of College__________ Years of special school__________

Discuss your plans: __________
____

25. How do you plan to finance any further education? __________

26. List below any questions you may have regarding your further educational plans: __________

27. If you had the opportunity to meet with someone in the field of your choice would you be

(check one)
_______Very Interested
_______Interested
_______Not Interested

Name the field __________

28. Would you want (check those you would like)
______a personal interview
______a discussion with others also interested
______seeing the job in action
______working in connection with the job

(Now double check those you want very much)

29. If it were possible for you to work NOW in this field, would you prefer

(check one)
______work after school
______work on weekends
______work on a cooperative basis with your school program
______work during a vacation period

(Now double check those you want very much)

30. Discuss anything you do very well or any skills or talents you have.

31. Discuss any of the types of activities and work that are difficult for you.

32. What in your life so far has given you the most satisfaction?

33. What do you consider to be your most serious problem?

34. What do you worry about most?

35. Do you consider yourself to be (answer all three)

Well liked by ______________________
Misunderstood by ___________________
Not liked by _______________________

36. Do you consider your health to be (check one)

___Excellent ___Average ___Poor

37. Do you have any health handicaps? Yes______ No______
Discuss

38. If you could have your wish for what you desire most, what would it be?

39. What sort of a person would you like to be ten years from now?

Additional Item

40. List the following information about your brothers and sisters:

Name	Sex		Education	Married		Occupation
	M or F	Age	Last Grade	Yes	No	

EVALUATION OF STUDENT DISCUSSIONS*

Name______________School__________Period________Type of Class_____Date_____

Subject or topic of discussion____

1. Were students told in advance to prepare for a discussion on this topic?
   Yes_____No_____

2. Evaluate class interest (check one)
   More interested than usual________.
   Normal amount of interest________.
   Less interested than usual________.

3. Please evaluate each student regarding his part in the discussion. (Check one only in A *and* one only in B).

	Evaluation of Today's Performance A			Today's Performance in Relation to Usual B		
Name	Below	Average	Above	Better Quality Than Usual	Normal	Poorer Quality Than Usual

*Rating scale used by teachers following observed classroom discussion sessions

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OBSERVER RECORD OF ORDER OF STUDENT AND TEACHER CONTRIBUTIONS IN CLASS DISCUSSIONS

School________________________Class Type____________________________________

Teacher________________________Observer____________________________________

Subject or Topic of Discussion____

Teacher

	a	b	c	d	e	f
1						
2						
3						
4						
5						
6						

Two observers recorded order of class participation, by numbering each contribution of all the class discussions which were tape recorded. Only rarely was there disagreement as to which student spoke or in what order. These observer records were used with the tape recordings in the preparation of typescripts in order to help us identify each individual who spoke.

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FINAL RATING OF STUDENTS*

Teacher________________________ School____________________________
Grade____________ Hour____________ Date__________________________________

Rating Scale

We have asked the students to indicate their attitudes toward school, themselves, and others in several different ways. Observers have been able to add additional information. However, we feel that no study of a given adolescent will be complete without the judgment of his teacher. Several qualities with which this study is concerned have been listed. We would like you to list each child's name (first initial and last name only) under the appropriate rating (1,2,3,4,5) in each of the categories. Following this, place a number (1,2,3) after the child's name each time it appears to indicate the amount of improvement in the area under consideration. (1. little or no improvement; 2. average improvement; 3. great improvement).

Sample:

CREATIVENESS

1 Poor	2 Below Average	3 Average	4 Above Average	5 Outstanding
M. Brown-1	B. Blue-3	S. White-2	V. Black-3	S. Green-1
	J. Short-2	T. Brown-3	M. Wide-1	J. Hansen-3
		J. Hove-1		

---

* This rating was made by teachers at post-testing. Students were rated in terms of entire ninth grade population on six intellectual qualities and one social rating.

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USE OF RESEARCH EVIDENCE-OTHER THAN TEXT

1	2	3	4	5
Poor	Below Average	Average	Above Average	Outstanding

QUANTITY OF PARTICIPATION

1	2	3	4	5
Poor	Below Average	Average	Above Average	Outstanding

QUALITY OF ORAL PARTICIPATION

1	2	3	4	5
Poor	Below Average	Average	Above Average	Outstanding

SOCIAL ACCEPTABILITY

1	2	3	4	5
Poor	Below Average	Average	Above Average	Outstanding

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ENGLISH CLASS SURVEY* - PART ONE

Name ______________________________ Date ______________________________

School ________ Grade __________ Teacher __________ Class Hour _________

Your school is trying to develop all the abilities of its students. Answers to these questions will show how the members of your class get along in some ways. This information will help improve future classes. The names you list here are confidential (secret).

You are to rate members of this class. For each of these 6 questions choose 3 (your first, second and third choices) members of this English class. It is important that you answer honestly and fill in all three choices.

1. If your English class were to have groups working together on a project to be presented orally (out loud), whom would you choose to work with, so that your project would be the best one?

   1____________________________

   2____________________________ 3 ______________________________

2. What people in this class would you have the most fun with on a picnic?

   1____________________________

   2____________________________ 3 ______________________________

3. When your English class is asked for original (new) ideas, who has the most good ideas?

   1____________________________

   2____________________________ 3 ______________________________

4. In a class discussion, who is most willing to listen to other people's ideas and from this to change their own ideas if it appears the idea is wrong?

   1____________________________

   2____________________________ 3 ______________________________

5. What people would you like to go with from this class to a dance? (Choose both boys and girls)

   Boys: Girls:

   1____________________________ 1______________________________

   2____________________________ 2______________________________

   3____________________________ 3______________________________

6. Who do you think is most likely to disagree (question, challenge) with what someone else has said? (Who is the skeptic?)

   1____________________________

   2____________________________ 3______________________________

---

*This is referred to in text as the sociometric measure. Teachers and students filled out this form.

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ATTITUDE CHECKLIST*

Name ______________________________ Date ______________________________

School ______________ Grade __________ Teacher ______________ Class Hour ___

Here are some sentences. As you check them think of yourself as you feel in this English class. Read each sentence and decide if it is: 1. Just like me, 2. Mostly like me, 3. Somewhat like me, or 4. Not like me. Then mark an X in the column which tells how the sentence applies to you, especially as you are in this class.

	Just like me	Mostly like me	Somewhat like me	Not like me
1. I like school.				
2. I never have enough time for my homework.				
3. I can learn most anything.				
4. Books interest me.				
5. Sometimes I want to rebel.				
6. I get lots done.				
7. My grades are poor.				
8. I like to hear other people's ideas.				
9. I like to study.				
10. It's fun to argue.				

---

*This is referred to in text as Concept-of-Self-as-School-Learner.

ATTITUDE CHECKLIST --- CON'T.

	Just like me	Mostly like me	Somewhat like me	Not like me
11. I need help with my school work.				
12. I have lots of new ideas.				
13. School is no fun for me.				
14. I'm well liked.				
15. I hardly ever study.				
16. I use my time well.				
17. School work is hard for me.				
18. I always stick up for my rights.				
19. It's hard for me to settle down.				
20. I can think critically and sort good ideas from poor ones.				
21. I'm a good student.				
22. I hate to admit someone else is right.				
23. I never seem to have a new idea.				
24. I like to be agreeable.				
25. I'm happy about my marks.				

SCHOOL INTEREST SURVEY*

Name ______________________________ Date ______________________________

School ________ Grade _________ Teacher _________________ Class Hour _____

Note: Your answers to all these questions are confidential (secret).

1. Father's occupation ____

   Describe what he does

2. Do you find your studies in generaly easy _____ or hard _____ ? (check one)

3. School studies liked MOST (check one) Easy or Hard

________________________		_____	_____
________________________		_____	_____
________________________		_____	_____
________________________		_____	_____

4. School studies liked LEAST (check one) Easy or Hard

________________________		_____	_____
________________________		_____	_____
________________________		_____	_____
________________________		_____	_____

5. Is school work interesting to you? __________ (yes or no)

6. What is your present vocational (future work) choice?

   ____

7. What do you think you will be doing on this job?

8. How will you prepare for this work?

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*Questions 3 through 5 were used to determine general attitudes toward English and school.

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ATTITUDE SURVEY*

Name____________________________________ Date ______________________________

School ___________Grade__________Teacher________________Class Hour______

The following questions concern how you feel about this English class. Answers are confidential.

1. What do you like most about it? Explain.

2. What changes would you suggest for next year?

3. Would you like to have more classes like this? Why?

4. Would you recommend this kind of class for others?

   Who?

   Why?

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*These questions were used to determine attitudes toward the experimental English classes, both homogeneous and heterogeneous.

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APPENDIX C

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INDEX OF STATUS CHARACTERISTICS (ISC)*

Directions: Assign the individual or the status parent appropriate values on the scale from "1" (high) to "7" (low) for each of the characteristics selected for the index to be used in the study.

A. AREA LIVED IN

1. Select residential area (or areas) of highest repute in the community.
2. Better suburban and apartment house area; homes with large grounds.
3. Preferred residential areas, adequate grounds; good apartment buildings.
4. Residential neighborhoods with no deterioration; reputed to be average.
5. Area beginning to deteriorate; business or industry entering into it.
6. Area considerably deteriorated but not a slum area; depreciated reputation.
7. Slum area (or areas) of the community; neighborhood in bad repute.

B. HOUSE TYPE

1. Large houses in good condition; adequate grounds--1A, 2A, 1B, 2B.
2. LH in medium condition; MH in good condition; best apartments--3A, 3B, 1C, 2C.
3. MH in medium condition; large apts. in well-kept buildings--3C.
4. LH and MH in fair condition; apt. buildings in medium condition--1D, 2D, 3D.
5. SH in good condition; good apts. in remodelled houses--4A, 4B, 5A, 5B.
6. SH in medium condition or fair condition; apts. in fair condition--4C, 4D, 5C, 5D.
7. All houses and apts. in bad condition; store fronts et al.--1E, 2E, 3E, 4E, 5E.

> Note: Houses are rated according to size--(LH)-1 or 2, (MH)-3, (SH)-4 or 5--and condition--(good)-A or B, (medium)-C, (fair)-D, (bad)-E. The twenty possible types are fitted into the seven ratings.

C. OCCUPATION

Classify the individual or status parent according to kind of occupation--professional, proprietor, business man, white-collar worker, manual worker, service and miscellaneous, landowners and farmers--and then rate the person concerned according to level, consulting the accompanying chart for guidance.

D. SOURCE OF INCOME

1. Savings and investments, inherited--50% or more of the income.
2. Savings and investments, gained by the earner--not retirement pensions.
3. Profits and fees--including higher executives who share in profits.
4. Salary or commission--including retirement earned thereby. (Check List).

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*The ISC is taken from Warner, W. L. et al., Social Class in America, Chicago: Science Research Association, 1949. Two indexes, occupation and education, were used to describe the parents of the ninth graders.

5. Wages, based upon hourly rates or piece-work. ("Time Card" personnel)
6. Private aid or assistance--may be supplemented by part-time work.
7. Public relief and non-respectable income, according to reputation.

Alternate and Modifying Indices.

E. EDUCATION

1. Completed one or more years of graduate work at college or university.
2. Graduated from four-year college, university, or professional school.
3. Attended college for two or more years, or equivalent higher education.
4. Graduated from high school, or equivalent to secondary education.
5. Attended high school, completed at least one year but did not graduate.
6. Third to eighth grade (older persons) shifting to below eighth (young adults).
7. Below third grade (older persons) shifting to below eighth (young adults).

F. ETHNIC GROUPS--ETHNICITY AND ETHNIC SECTS--COLOR CASTE

1. Old American or Anglo-Saxon
2. Assimilated American
3. French Canadian or Irish Catholic
4. Northern European ethnic group or sect
5. Southern European or Jewish
6. Eastern European or Near East
7. Color Casts-- Negro, Oriental

OCCUPATIONAL RATINGS

Level	PROFESSIONALS	PROPRIETORS	BUSINESS MEN	WHITE COLLAR WORKERS
1.	Lawyer, doctor, dentist, judge, minister, professor, engineer, ind'l chemist, school sup't'd, coun. vet'n.	Value $75,000 plus, depending upon nature of the community.	Top executives; president, mgr, etc. of corporations, public utilities, banks, et al.	Executive secretary of status organizations; C.P.A.; editor of reputed newspaper or magazine.
2.	High school teacher, trained nurse (RN); chirop'st, chiropractor, architect, undertaker, minister (no college).	Value $20,000 to $75,000.	Assistant office & dept. managers or supervisors; mgrs. of medium sized branches; mfrs. agents.	Accountant; insurance, stock and bond, real estate salesman in reputed firm; columnist or editorial writers, etc.
3.	Grade school teacher, optometrist, undertaker's ass't., pharmicist (employee), city vet.	Value $5,000 to $20,000 or similar equity.	Mgrs. of small branch stores & similar businesses; sales-men (better mdse & known customers); buyers.	Bank & broker clerks; secty, sr. postal clerk, R.R. agent, spvsy, staff on telegraph, R.R., pub. utilities; elected civic and county officials, newspaper reporter, etc.

4.		Value or equity $2,000 to $5,000.	Stenographer, bookkeeper, rural mail clerk; ticket agent, auto salesman, auto, clothing, book, drygoods salesman.
5.		Value or equity $500 to $2,000 (Small Proprietors).	Drug store, hardwaré, grocery, dime store clerks, telephone & beauty operators, dressmaker, practical nurse.
6.		Value or equity less than $500.	
7.			

Level	MANUAL WORKERS	SERVICE & MISCELLANEOUS	LANDOWNERS & FARMERS
1.			Gentlemen farmers; large landowners & operators who patronize the local activities.
2.			Managers & land operators with active urban life. (20M)
3.	Small contractor who works at or superintends his jobs.	Commercial pilot.	Owners and operators of good mechanized farms. (10M)
4.	Construction, factory, or mine foreman, carpenter, electr'n, plumber, welder, master mech; R.R. engineer & trainmen; linotype operator, printer.	Police captain et al.; butcher, tailor, dry cleaner (small town); Pullman conductor.	Small landowners and the "forgotten farmer" who owns a "decent" place.
5.	Apprentice to skilled trades; time-keeper; R.R. firemen & brake men; tel. and tel.linemen; medium-skilled factory workers; lead hands, section chiefs.	Policeman; barber; gas station opr's; butcher apprentice; bar tender; liquor salesman; head waiter.	Tenants on good farms; owners of farms who just manage to make a living.
6.	Semi-skilled factory and production workers; warehouse-men; janitor, watchman; cook.	Taxi and truck drivers; baggagemen; delivery man; gas station attendant; waiter or waitress.	Sharecroppers; established farm laborers; subsistence farmers who "work out".

7.	Laborer, miner, mill hand; migrant worker; section hand; scrub woman, laundress.	Domestic servant; bus boy, etc. Reputed lawbreakers.	Migrant workers, unestablished and do not want to be.

Dale, Edgar and Chall, Jeanne S. "A Formula for Predicting Readability: Instructions." Educational Research Bulletin 27 (Jan. 21, 1948): pp. 37-54.

This is a formula which distinguishes two important elements (level of vocabulary and length of sentence) in the study of communication patterns. Level of vocabulary is determined by the number of words classified as unfamiliar (difficult), i.e., are not to be found among the 3000 words listed by Dale-Chall as familiar to fourth grade readers, Length of sentence is established by dividing the total number of words in the sample by the number of sentences. In reviewing the literature on language development, McCarthy has remarked that the most important single measure for determining the level of language development is length of sentence.*

McCarthy, Dorothea, "Language Development in Children", Manual of Child Psychology, (Carmichael, Leonard, ed.). New York: John Wiley & Sons, 1954.

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EXAMPLES OF HOMOGENEOUS SUPERIOR STUDENTS' ATTITUDES TOWARD ENGLISH CLASS

What do you like most about it? Explain.

1. The feeling that I get out of being on my own.
2. You aren't drilled all the time and there is more freedom to do research.
3. We discuss instead of memorize.
4. Everyone is about the same level, and you have to work hard, and can't relax like you can in some classes where there is no challange,
5. The "free" feeling. The feeling that everyone wants to learn and everyone feels "natural" towards each other.
6. I like the freeness and the shared leadership. In this class everyone is comfortable and at ease but still polite and no one is any better than anyone else.
7. Freedom of expressing myself. Something always doing (I can use my mind).
8. It is not the same old thing over and over.

Would you like to have more classes like this? Why?

1. Yes, I feel that literature and free thinking is more important than a whole year of nouns, pronouns, and adverbs.
2. Yes. I think it gives kids a challange having to work with people of your ability. And we don't have to go so slow and hear things repeated etc., and it gives us a chance of independence to do researach, etc.
3. I like the freedom very much, we didn't have just drill.
4. Yes. Because you can go faster and do more interesting things whereas if you were in a regular class you would have to go slow and do easy things for the others.
5. Yes. To give more students with above average intellect more of a chance.
6. Yes. You can learn things in different ways and you can do other special things.
7. Yes, most of us understand each other quite well in our thinking. I think this is good in a class. You feel more free to express your ideas.

EXAMPLES OF HOMOGENEOUS SUPERIOR STUDENTS' ATTITUDES TOWARD ENGLISH CLASS (Cont)

Would you recommend this kind of class for others? Who? Why?

1. **Yes. People who can express their and don't get lost in a discussion and those that can stand homework.**

2. **Intelligent people who are interested in learning, but don't like the stiff, but and dried lessons from a text.**

3. **For kids that can discuss and think through a problem and express their ideas and are better than average readers.**

4. **Above average readers. If you have someone who is always stumbling in their reading, it makes it dull for the whole class.**

5. **People who are able to learn at a fast rate and are bored with their present classes (because) this class offers a challenge and helps meet the learning capacity.**

6. **Those who learn quickly and who would be hindered more than helped in a regular class.**

7. **People who love to work and have ideas.**

8. **Above average students. They wouldn't have the same thing to do that they have had for eight years before.**

x

EXAMPLES OF HOMOGENEOUS SLOW STUDENTS' ATTITUDES TOWARD ENGLISH CLASS

What do you like most about it? Explain.

1. I like discussinn.
2. Discussions. I like to talk.
3. The teacher and the kids in it.
4. Class discussions because I like to take part.
5. It is ez to understand . . .because it is small and everybody is nice to get along with.
6. Because you don't get jumped on like you would if you did not have a good teacher.
7. It gives you a chance to learn and get personal help from the teacher and things are explained clearer to me.
8. The nicest English teacher I ever had. The work is not too hard for me.
9. She explains the work and she don't give more than you can do.
10. The teacher tries so hard for everyone to learn.

Would you like to have more classes like this? Why?

1. Yes, because I can read what we do their.
2. Yes, because we have a lot of work but it isn't too hard.
3. I like the teacher.
4. Yes. Because some of the clasaes are too hard for some people and it would help them learn.
5. Yes, because I need more hilp with may work.
6. Yes because when the class is small everyone gets to do something.
7. Yes. Everyone is able to take part in class.
8. Yes. Because if you understand the work it is easier to learn about it.
9. Yes. Because in the regular classes I don't feel like talking about the subject because the kids can explain what they mean and they talk smarter and I feel like I don't belong in that class.

EXAMPLES OF HOMOGENEOUS SLOW STUDENTS' ATTITUDES TOWARD ENGLISH CLASS (Cont)

Would you recommend this kind of class for others? Who? Why?

1. The people who have a hard time reading.

2. Yes. Because it is more cheerful.

3. For kids that don't learn very fast. Because they go slow.

4. My friend. He needes more hilp like me.

5. Yes. Most of the time there is a pleasant atmosfear.

6. Yes, because you learn to read and get up and front of your friends and give book reports.

7. For the person who has troubles reading, writing, and expressing himself. Because if a person really wants to learn he will be glad to be in a class like this.

8. The slower readers and bad spellers because they can get more attention.

9. Yes. You don't feel like your smarter or domer than others.

EXAMPLES OF HETEROGENEOUS SUPERIOR STUDENTS' ATTITUDES TOWARD ENGLISH CLASS

What do you like most about it?

1. Class discussion. I'd rather talk than sit and read out of a book or do an assignment.
2. I like the discussion. I think you learn more from discussion than from reading books.
3. The discussions about life's problems. For instance, juvenile delinquency, parents, dating, allowances, etc. It gives me a chance to see how other people feel about these things.
4. The freedom we get, we are able to discuss anything.
5. Easy going class -- not much work -- free time.
6. I like the literature section as I read constantly. This helps me in my choice of books.
7. Not having the whole class working together.
8. Anything having to do with writing and some composition. I like good literature and like to write.

Would you like to have more classes like this? Why?

1. No, too much organization; stays on one subject.
2. No, I don't like to stand out from the group all the time.
3. Yes, it's easy; nice teacher.
4. Yes, maybe because I get good marks and the majority of the others don't.
5. I think when you have a group of selected people in a class that have average or better grades, it makes the students work harder for their grades.
6. Yes, because it's informed.
7. Not especially. I like to have something to occupy me. Time kind of drags.
8. Yes, because it's interesting.

EXAMPLES OF HETEROGENEOUS SUPERIOR STUDENTS' ATTITUDES TOWARD ENGLISH CLASS (Cont)

9. No, because of some of the rude students we had.

10. No! Some students find it hard to keep up and others find it too slow.

11. No, it is a dull, boring class except when we have class discussions or oral reports.

12. No, I think schools should have classes for the different levels of intelligence so that the smarter students won't be held back or the below average be pushed.

Would you recommend this kind of class for others? Who? Why?

1. No, I think if you are with those of your own level you can understand it better.

2. Yes, for kids who are self conscious. You can let your ability come out.

3. Yes to anyone who is average or better in his classwork. It makes them use their brain and really put forth some effort.

4. I'd recommend this class for kids below average.

5. Possibly to people of about or slightly above average. Everyone would be on about the same intelligence level and should participate equally.

6. No. Because if they aren't ready to learn they will just mess off.

7. Yes to the above average. They could get more accomplished.

8. Yes to all students who enjoy English, because I believe if she (the teacher) had all students that enjoyed English . . . the students could really learn.

9. Yes, for kids who are interested, who can get good grades quite easily, and who are courteous enough not to be disorderly.

10. Only for the more intelligent type of individual.

11. Yes, to the eighth graders.

EXAMPLES OF HETEROGENEOUS SLOW STUDENTS' ATTITUDES TOWARD ENGLISH CLASS

What do you like most about it?

1. The way they discuss a matter in the classroom.
2. The teacher is nice.
3. The teacher. We'll (We all) get along well.
4. The stories we read, and the talks we have.
5. Talk about stories in our book.
6. There is always something to do in class.

Would you like to have more classes like this? Why?

1. Yes, becuase learn so many things
2. No cause I don't like English so well
3. Yes, not much homework but we cover a lot of work.
4. I don,t like this
5. Yes to teach you more things you don't know.
6. Yes because we read a lot in class.
7. No, because I don't like English class
8. Yes because I would understand how to do my work better.
9. Yes because we have more interest subject in here than in any other place
10. Yes because everyone in class would learn something
11. Yes, I wound
12. No, because I don't like English very much, its too hard for me.

EXAMPLES OF HETEROGENEOUS SLOW STUDENTS' ATTITUDES TOWARD ENGLISH CLASS (Cont)

Would you recommend this kind of class for others? Who? Why?

1. no, I don't know why
2. Yes, because we went over all the stories we read in class.
3. No one, because I don't think anyone would like it.
4. One who likes to work.
5. John Doe because his English isn't so good.
6. All that find English hard.
7. ~~yes~~ Other kis, because it's fun sometim when we don't have no home work.
8. ~~no~~ Yes, to anyone who gets fairley good grades because you learn something everi day.
9. Smarter people in the class because its a room for smarter people.

STUDENT ABILITIES, GROUPING PATTERNS, AND CLASSROOM INTERACTION

Addendum

This report deals with a number of research areas and for many of these, fundamental research contributions and basic theoretical studies are only inferred or mentioned casually. Due to the character of this report (centering on a single research) it was not possible to do a thorough coverage of so many areas at this time. However, in her forthcoming book, tentatively titled, Individual Differences and Instructional Grouping, the principal investigator is developing such extensions of the present study.

Errata

Chapter 7, page 115, 1st paragraph, 2nd line:

"with the predominate . . ." SHOULD READ "with the predominant . . ."

Chapter 12, page 245, 2nd paragraph, 6th line:

"during . . . (it would seem that a given . . .)" SHOULD READ "during . . . (it would seem a given that . . .)"

Appendix C, page x, 1st statement:

"Yes. People . . . express (blank) and . . ." SHOULD READ "Yes. People . . . express ideas and . . ."

Appendix C, page x, 2nd statement:

"stiff, but and . . ." SHOULD READ "stiff, cut and . . ."